

# The Canadian Medical Association

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## Journal

JAN 30 1956

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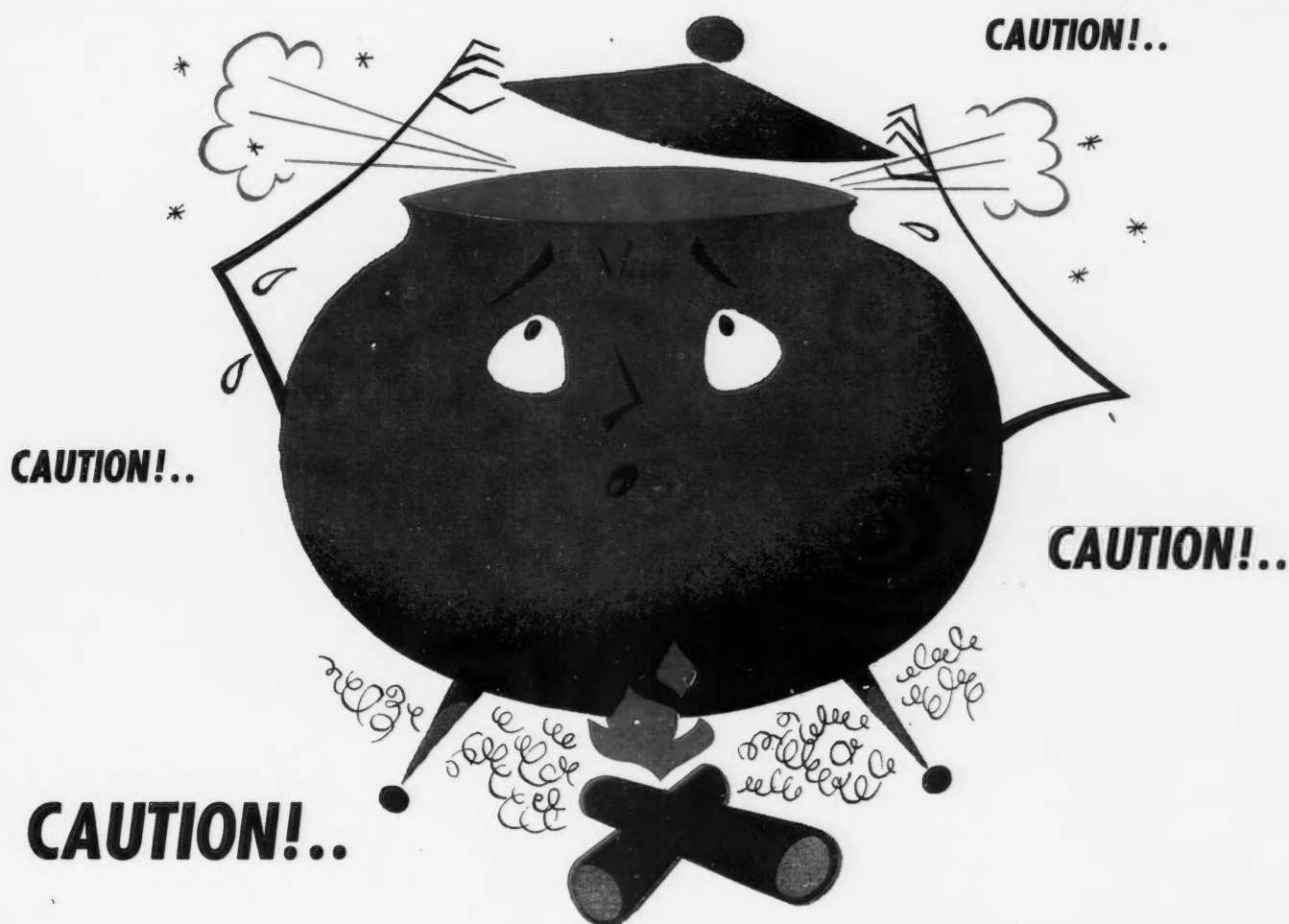
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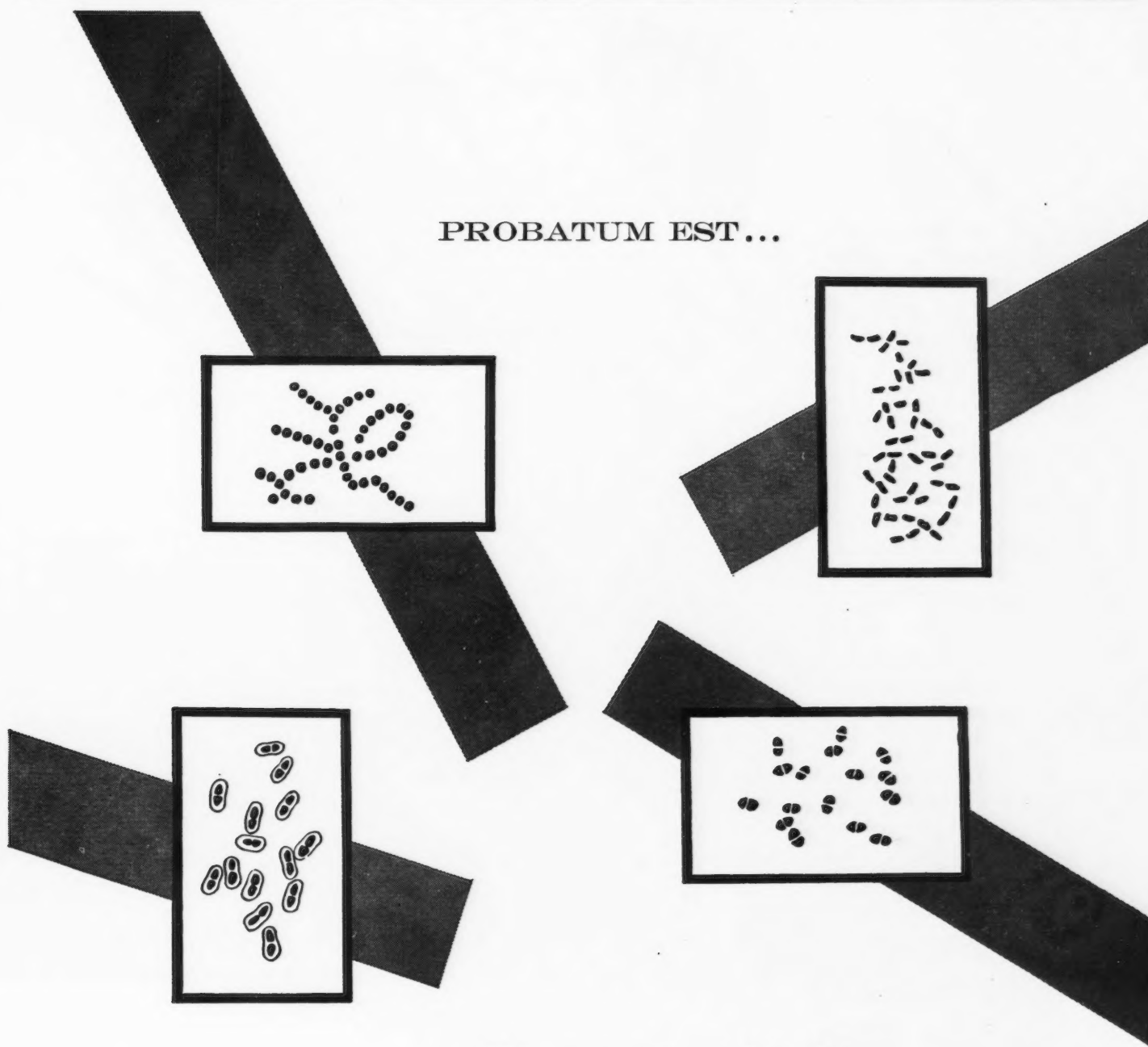
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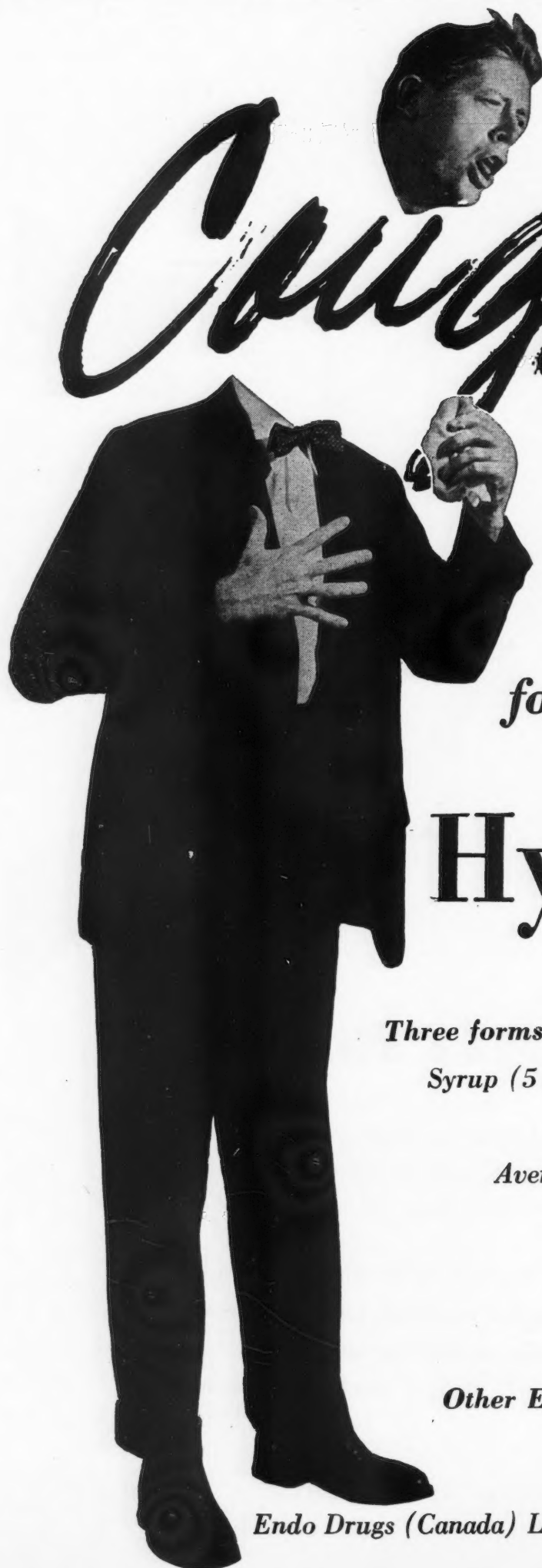
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E. M. Yow, Am. Pract. & Digest Treat.  
4:521, 1953.




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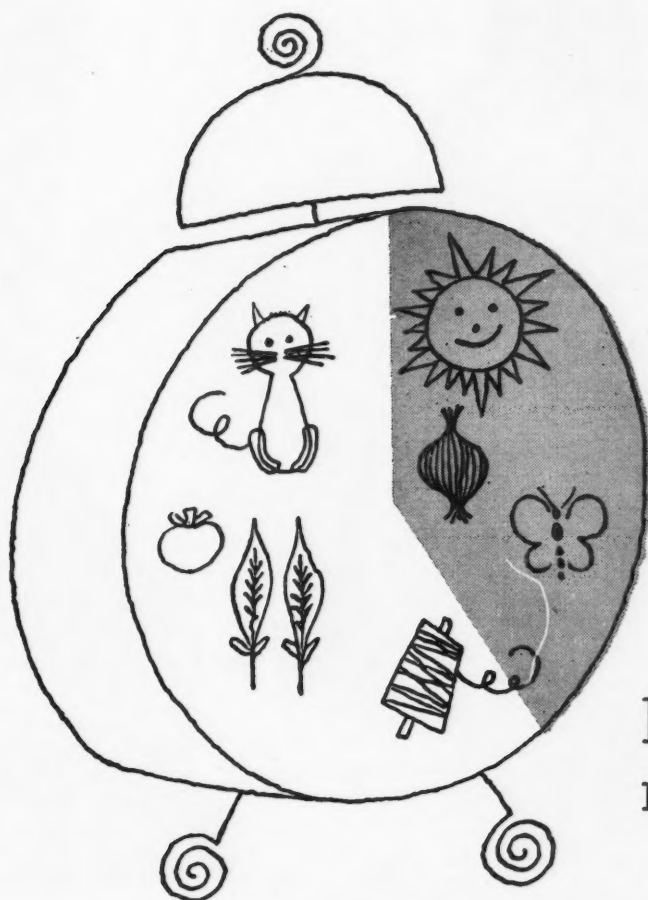
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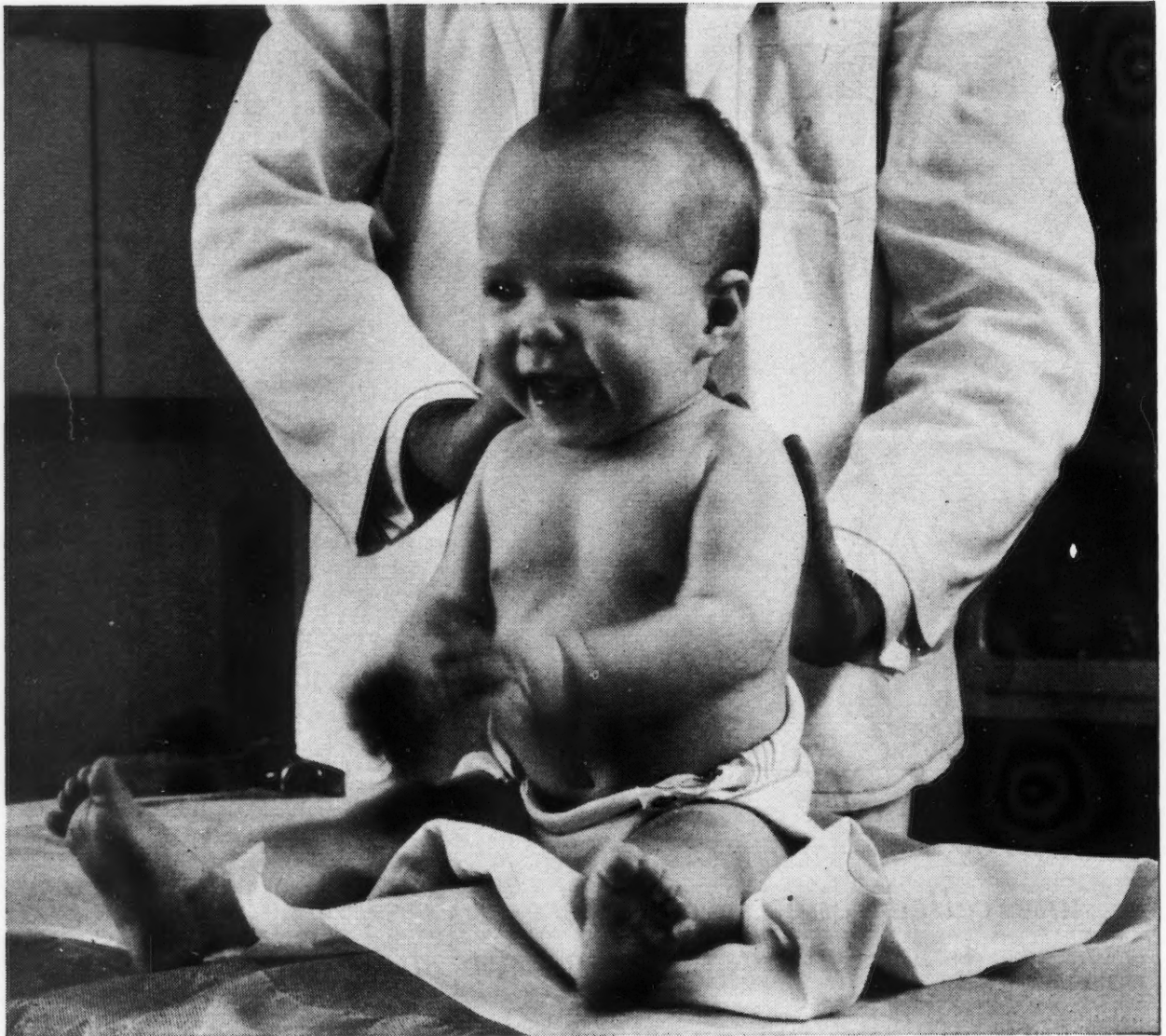
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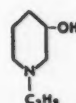
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## *Thirty Years Ago . . .*

From an editorial, January, 1926

The Saint John Medical Society was privileged to entertain Dr. J. Appleton Nutter, Montreal, and Dr. T. C. Routley of Toronto, at their meeting on December 14. The meeting took the form of a dinner at the Admiral Beatty Hotel. Dr. Nutter spoke on the subject of paralytic deformities in children. His address was short, concise and most practical. Dr. Routley outlined the plans of the Canadian Medical Association with special reference to organization and the conduct of an extra-mural lecture. This visit of these two doctors inaugurates a new department organized by the Canadian Medical Association of extra-mural lectures. The Saint John physicians keenly appreciate the fact that their city was the first to benefit by this plan.

A skeptical editorial discusses the claims of Boston pædiatrics to have achieved success in the treatment of whooping cough by x-rays. The editorial writer is somewhat doubtful of the value of this method in view of the absence of controls and warns about the danger of irradiation of the thyroid, a question which was under discussion 30 years later. The other methods he criticizes are vaccine treatment, use of antipyretics and injections of ether intramuscularly and rectally.

Another editorial refers to the prevention of dental caries in children. The chief factor considered is the calcium content of the diet. The writer recommends a high calcium diet, mainly obtained from a quart of milk a day. He deprecates the excessive use of candies, stating that sugar in too great amounts prevents the absorption of a proper amount of calcium. He also comments on the observation of a U.S. educationist that treatment of children's teeth may lead to abolition of behaviour disorders and may raise their intelligence level.

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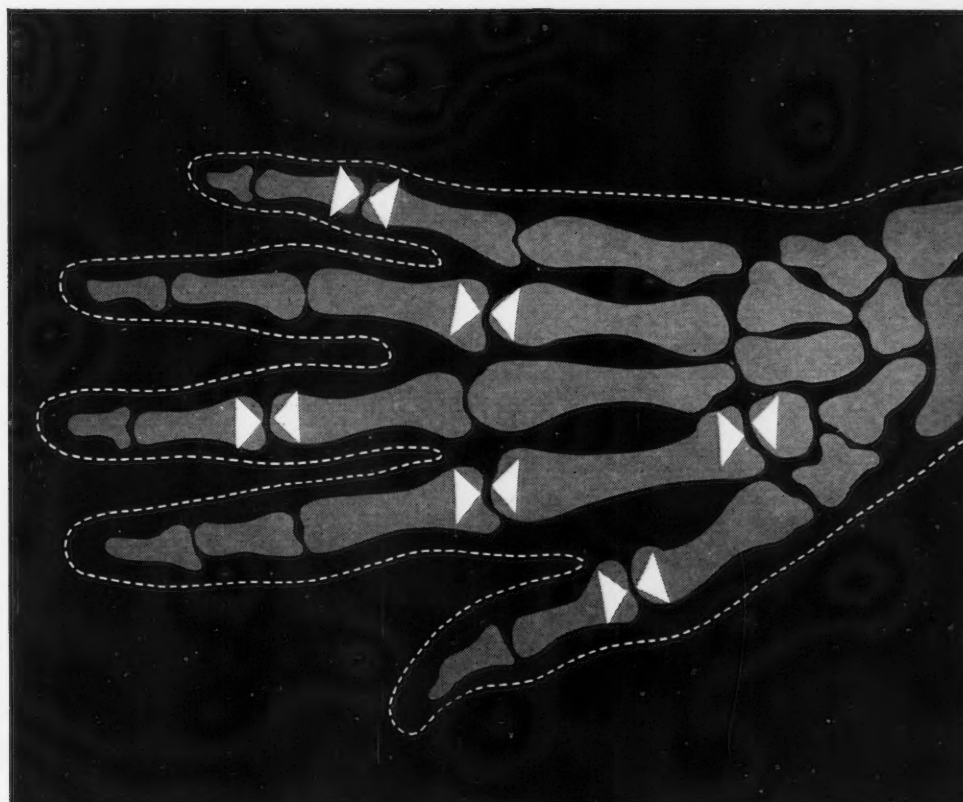
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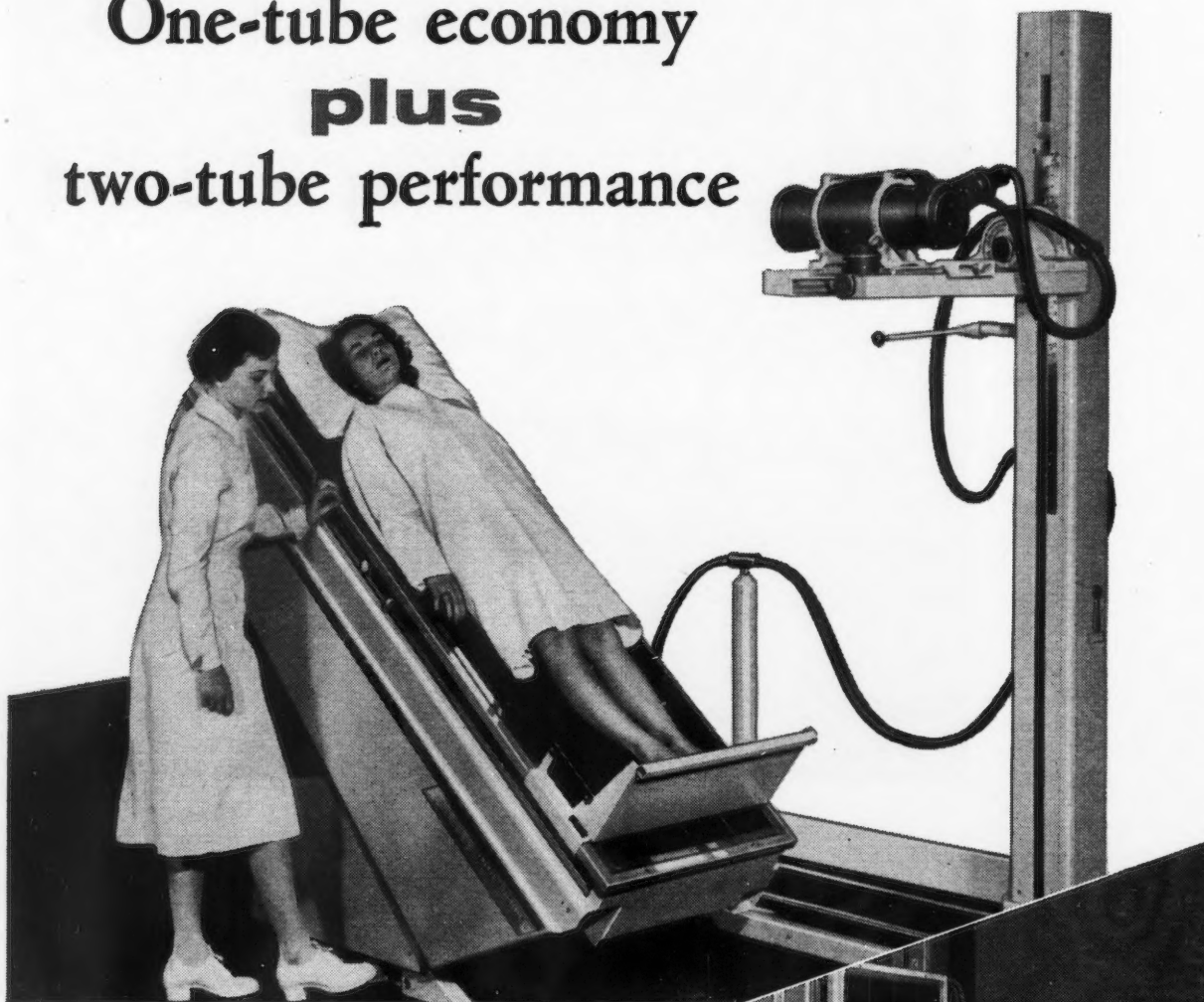
†Holbrook, W. P.: M. Clin. North America 39:405 (March) 1955.

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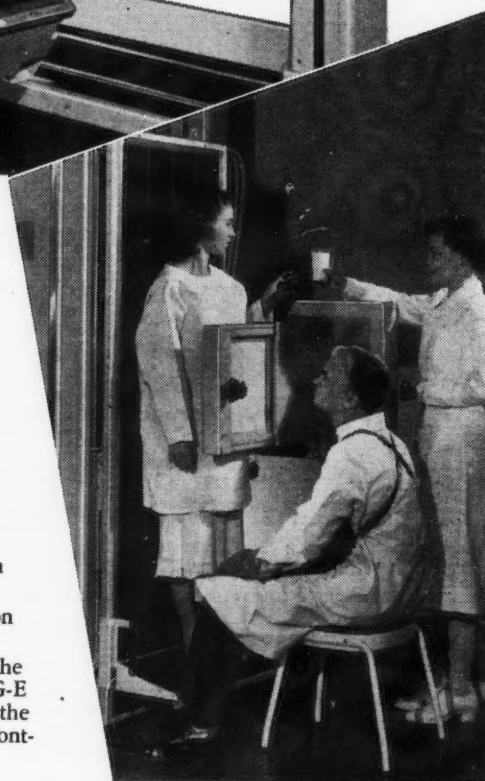
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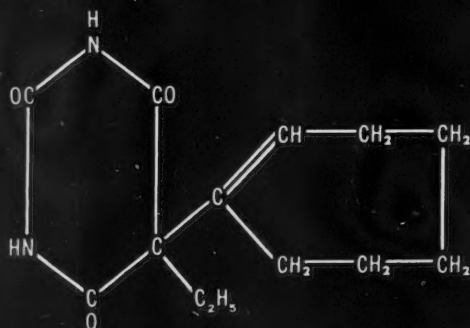
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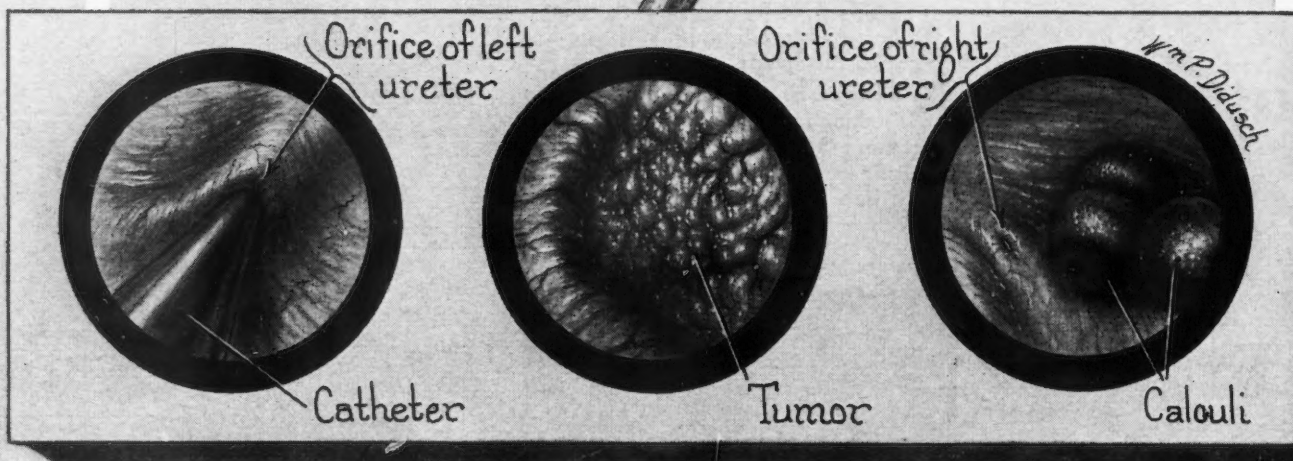
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\*Coleman, F.: J. Kentucky M. A. 52:769, 1954.



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**Reference:** 1. Poth, E. J., J.A.M.A. 153:1516 (Dec. 26) 1953.



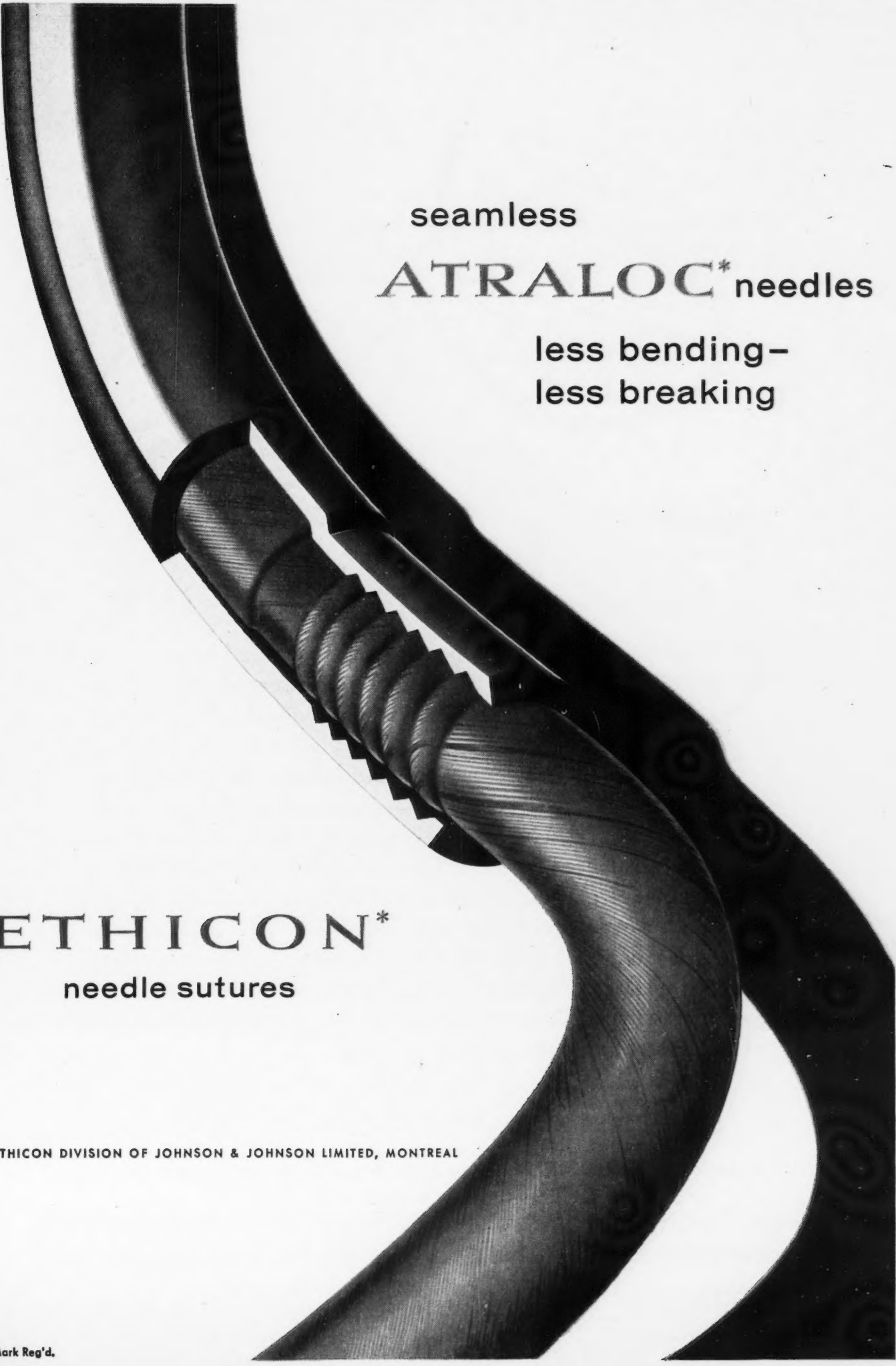
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O'Sullivan, Higgins & Wilkinson—The Lancet 2, 482.  
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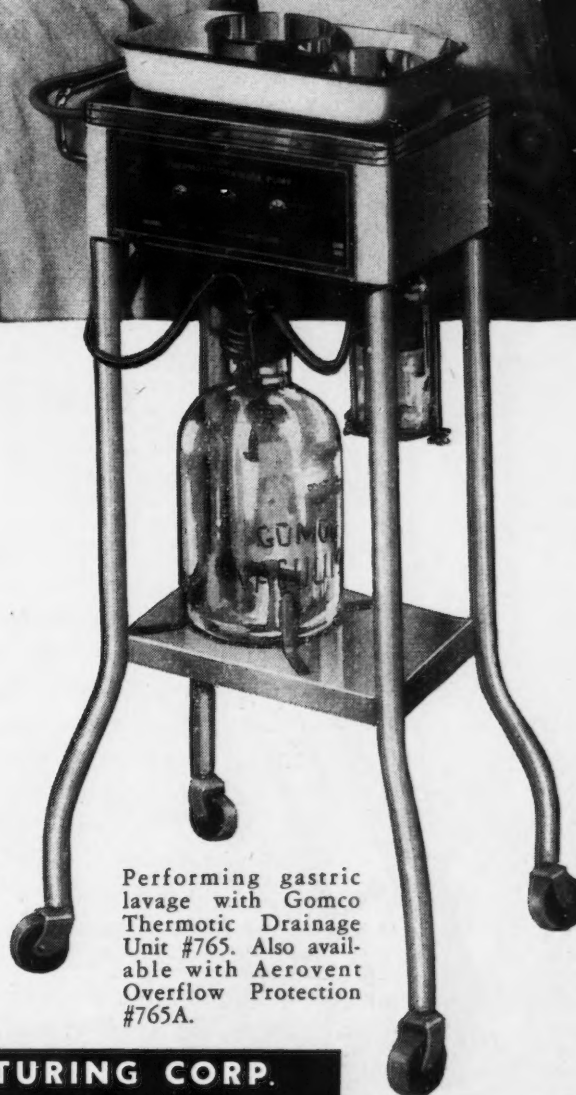
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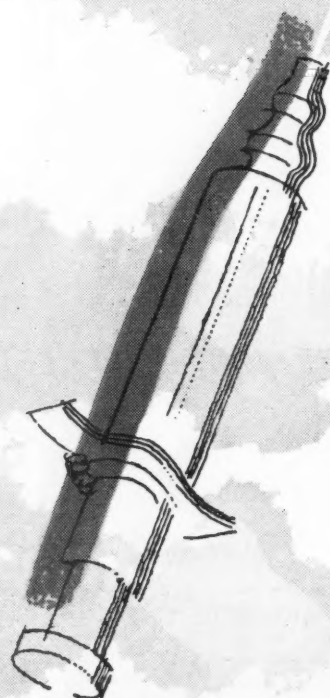
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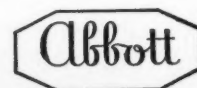
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# The Canadian Medical Association Journal

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## STATISTICAL ASPECTS OF SUICIDE\*

AUBREY LEWIS, M.D., F.R.C.P.,†  
*London, England*

A HUNDRED YEARS AGO a notable English historian wrote:

"It may very naturally be thought impracticable to refer suicide to general principles, or to detect anything like regularity in an offence which is so eccentric, so solitary, so impossible to control by legislation, and which the most vigilant police can do nothing to diminish. There is also another obstacle that impedes our view: this is, that even the best evidence regarding suicide must always be very imperfect. In cases of drowning, for example, deaths are liable to be returned as suicides which are accidental; while, on the other hand, some are called accidental which are voluntary. Thus it is, that self-murder seems to be not only capricious and uncontrollable, but also very obscure in regard to proof; so that on all these grounds it might be reasonable to despair of ever tracing it to those general causes by which it is produced.

"These being the peculiarities of this singular crime, it is surely an astonishing fact that all the evidence we possess respecting it points to one great conclusion, and can leave no doubt on our minds that suicide is merely the product of the general condition of society, and that the individual felon only carries into effect what is a necessary consequence of preceding circumstances. In a given state of society, a certain number of persons must put an end to their own lives. This is the general law; and the special question as to who shall commit the crime depends, of course, upon special laws; which, however, in their total action, must obey the large social law to which they are all subordinate. And the power of the larger law is so irresistible that neither the love of life nor the fear of another world can avail anything towards even checking its operation. The causes of this remarkable regularity I shall hereafter examine; but the existence of the regularity is familiar to whoever is conversant with moral statistics. In the different countries for which we have returns, we find year by year the same proportion of persons putting an end to their own existence; so that after making allowances for the impossibility of collecting clear evidence, we are able to predict, within a very small limit of error, the number of voluntary deaths for each ensuing period; supposing, of course, that the social circumstances do not undergo any marked change."

The social historian who wrote these lines, Henry Buckle, regarded statistical evidence as

the firmest basis for any comprehensive inference about men's actions; and in this he appealed to the great authority of Quetelet, who had arrived at the same conclusions about homicide as Buckle put forward regarding suicide. In the passage I have quoted we find the ideas, expressed in slightly old-fashioned language, which have informed the profuse statistical inquiries made into the frequency and causes of suicide since the middle of the last century. Whether we are reading Brierre-de-Boismont or Lisle, Wagner or Morselli—to name the earlier investigators—we meet the same search for general laws, the same awareness of the imperfection of available figures, and the same surprised confirmation of the fact that the phenomenon occurs with constant frequency in a given population over any period in which no great social changes have taken place.

The harvest yielded by statistical inquiries led otherwise critical men to overvalue them; Morselli, for example, triumphantly declared:

"From the investigation of comparative statistics, it appears that the true nature of suicide may now be reckoned amongst the most certain and valuable discoveries of experimental psychology. By applying to this social phenomenon the eminently positive method of numerical progression and of proportional averages, we have discovered its organic character, so to speak, have understood clearly its inward workings, and have explained scientifically its historical evolution."

Morselli was a psychiatrist, and an enthusiast. Dürkheim, the sociologist, had no such pleasant illusions, but set himself to reconsider some of the questions posed by suicide and in part answerable by comparative statistics. Whatever criticisms we may level at Dürkheim's antithesis between the social and the psychopathological explanations of suicide, it is plain that much of the most valuable statistical work on suicide is the outcome of his brilliant monograph.

Statistical work there has been in plenty both before and since Dürkheim—some of it actuarial, some sociological, and some clinical and psychological. There has indeed been so much that it would be folly to try to survey it or to add

\*Presented at the Psychiatry Section during the Conjoint Annual Meeting of the B.M.A., C.M.A. and O.M.A., Toronto, June 1955.

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anything useful to it in this brief paper. Latterly much of it has been directed at quantitative analysis of morbidity rather than mortality data, studying the biological gradient (to use Gordon's term) which culminates in a suicidal attempt. In these studies the methods of the epidemiologist have been applied. But the epidemiologist is disposed to lay more emphasis on physical features of the environment and on direct and inciting agents of disease than is appropriate when suicide is the subject of study. Here the human and the social environment are of major consequence. I shall therefore limit myself to a very brief review of some recent work concerned with the social processes that seem to favour suicide or seem to work against it.

Two studies carried out in Southern Asia illustrate this approach very well. The first of them took up the matter which so interested Buckle—the similarity between murder and self-murder. But the investigators (Straus and Straus) found that in Ceylon, where they made their study, this similarity expressed itself in an inverse relation—if the suicide rate was higher the homicide rate was lower, and conversely. To the psychiatrist, and indeed to the tidy-minded in general, this finding suggests that the same aggressive tendencies may be turned inwards or may be turned outwards, but it gives no help in judging whether their direction is determined by inner forces, as the psychoanalyst would hold, or by influences from the environment. The Ceylon investigators tried to illuminate this problem.

They found that in some important respects the people of Ceylon behave, as regards suicide, as European populations do; thus suicide was much more frequent among men than among women; the urban rate was very much higher than the rural; and the rate diminished in frequency during the Second World War, as it had in previous wars. There is here no difference between Ceylon and the West. But Ceylon has a lower suicide rate than most western countries; and there are striking differences in suicide rate between the numerous ethnic and religious sections of the population. The Europeans have the highest rate (80 per 100,000—a considerably higher rate than in Great Britain or any other European country); the Ceylon and Indian Tamils have the next highest rate—10 and 7 respectively; and the other sections of the community—chiefly the low-country Sinhalese—have

appreciably lower rates than this. The Muslims have the lowest rate of all.

These differences in suicide rate are unlikely to be due to constitution, or to climate, or to errors of ascertainment: and it is natural, since Dürkheim, to seek to relate them to the cultural and the social mores of the different groups. Dürkheim recognized three social concomitants or conditions of suicide. Either the individual is not integrated into society, and he commits "egoistic suicide"; or he is exposed to religious or political injunctions which govern his conduct rigorously, and he may commit "altruistic suicide" in obedience to them; or society does not regulate his life sufficiently for him, especially in times of rapid transition, and he commits "anomic suicide".

It is to the last of these that Straus and Straus are disposed to attribute differences in suicide rate between the religious and ethnic groups in Ceylon, though in the Tamils the tradition of religious suicide may account for some "altruistic" suicides. The texture of the social structure, its power to enmesh the individual within its close network of regulation and sanctioned behaviour, seems to them the essential factor in bringing about a high suicide rate. In a close structured society, individual identity merges into that of the group; reciprocal duties are strictly enforced, and offences against the code leave no alternative to the individual except suicide. The rigid caste system of the Tamils exemplifies this state of affairs. Among the Southern Province Sinhalese on the other hand the structure of society is looser; considerable variation of individual behaviour is sanctioned; suicide is by no means the obvious or only outcome to a breach of accepted mores. In such a society, suicide will be less frequent but homicide may be more tolerated and frequent than in the closely structured society.

This is plausible, but it is open to two objections. The concepts used are lacking in precision, as so often happens when metaphors like "looseness of structure" are transmuted into technical terms; and the conclusion seems at variance with equally plausible explanations offered by other investigators. Thus Dublin and Bunzel, and many others, hold that a close-woven society with common beliefs and practices has less suicide: "the remedy [for a high suicide rate] is to make the social group more consistent and more coherent".

In this uncertainty, it is illuminating to see what data and inferences another investigator provides, from his study of the people of a neighbouring and similarly heterogeneous centre, Singapore. Murphy in his very careful study classifies the population of Singapore into five main ethnic groups—Indian, Chinese, European, Eurasian, Malay: of these the Chinese make up about 76%. The Chinese and the Indian groups have the highest suicide rate (21.0 and 22.6 per 100,000 respectively), and the Malays have the lowest rate (1.7 per 100,000). There are also differences in the age and sex pattern of the different groups.

Murphy accounts for the most striking fact—the low Malay rate—in the way that Dürkheim suggested for communities whose religious system penetrates daily life at every point. While offering its adherents a fixed code of behaviour, such a religion exacts strict obedience in return, and within this framework the individual finds support. Malays are Muslims, and Muslims everywhere have a low suicide rate. But as Muslims from different countries differ from each other in suicide rate, further explanation is obviously needed. This Dr. Murphy offers, not in religious or societal but in cultural and psychological terms. Briefly, he suggests that the Malays have a more easy-going, come-day-go-day philosophy of life; they are people who are easily content, averse to planning and struggles for material success. He finds support for this view in the fact that 39% of the Chinese suicides are over the age of 44, whereas none of the Malay suicides are as old as this: the elderly, he points out, usually commit suicide as a planned act, in contrast to the young who do so on impulse.

Difficult though this question is, a still more knotty problem is raised by the Chinese groups in Singapore. There are, it has been found, gross differences in suicide rate between Chinese communities in different places in Asia and North America. It might be urged that these are spurious—mere artefacts of the method of registering suicide in various countries; but no such view can be sustained when one tries to account for the differential findings among the Singapore population, since for them the method of ascertainment and record is uniform. The Chinese people of Singapore came from different provinces of China and could be classified accordingly into tribes or dialectal subgroups:

there were five of them. These five subgroups, largely composed of immigrants, have much in common: they all share the same ancient and deep-rooted culture, they are not specially associated with a particular religion, are of the same social class, and (with one possible exception) are racially homogeneous. But in the rate of suicide and the ratio of its occurrence in the two sexes they differ significantly: the rate ranges from 12.2 to 24.4 per 100,000 men and from 6.8 to 16.2 per 100,000 women. This bears a close relation to the relative size of the five subgroups, so far as the male rates are concerned. There is indeed an inverse correlation between size and suicide rate, of the order of 0.88. Murphy infers that the smaller the community, the more its members feel that they belong to a minority with precarious claims upon the means of subsistence, and their insecurity becomes manifest in suicide. He sees the same phenomenon in the minority Protestant communities of South Germany, whose suicide statistics Halbwachs cited.

It is fairly clear that explanations such as I have been adducing from the Ceylon and Singapore studies are sufficiently conjectural to make further inquiry necessary before they can be accepted. To some extent this requirement has been met by other studies upon the same population. Thus Murphy also examined the geographical distribution of suicide in the area and found it unrelated to overcrowding and housing conditions, but he discovered that the suicide rate was higher in proportion to the admixture of dialectal subgroups in an area: in other words, he found support for his earlier inference that suicide is less common when individuals are surrounded by people of their own in-group, more common when they feel in a minority among "foreigners".

But, stimulating and probable as the explanations are, it is difficult to feel secure in attributing so complex a product as differential suicide rates to the very broad general causes adduced. The ethnic variety of the mixed populations of Ceylon and Singapore makes them in many ways a godsend to the social anthropologist and the student of culture patterns. But it also makes them less amenable to detailed study than the relatively homogeneous community of an occidental town.

A very detailed study of an urban community will very shortly be published. In it Sainsbury has examined the statistics of suicide in the various boroughs of London. No one could call

the population of London really homogeneous, and indeed its heterogeneity was the pivot of Sainsbury's valuable inquiry; but compared with the diverse cultures, languages and religions of the two Asiatic areas, London can be considered uniform, and it is better documented and more accessible to inquiry than Ceylon or Singapore.

Sainsbury's theory owed much to Dürkheim; for his method he was largely indebted to Shaw and Faris and Dunham, who had studied the relation between abnormal behaviour—delinquency or insanity—and the social conditions in different urban areas. Sainsbury further developed the methods of ascertainment and evaluation, and was able to demonstrate that rates for social isolation, social mobility, divorce and illegitimacy were correlated with the suicide rate for different boroughs. Unemployment and overcrowding, on the other hand, did not correlate with suicide. Complementary studies of individuals who had committed suicide were carried out with as much care as the inevitably retrospective data—chiefly derived from Coroner's Court depositions—allowed.

It is not my purpose to retrace the major findings in Sainsbury's inquiry. I quote it to bring out the common difficulty which has beset every investigator of the social correlates (which may well be the social causes) of suicide. Whether he worked in London or in an ethnically and culturally variegated population, such as that of Ceylon and Singapore, he found social criteria—measures of cohesion, isolation, disorganization, mobility—linked so closely to the psychological phenomenon of suicide that he could not but subscribe to Dürkheim's main thesis. If, however, he wished to pursue the matter, in accordance with more recent developments of sociology and psychiatry, so that the nature of the relevant social processes and their impact upon the suicidal individual could be fathomed, he was held up by two grave deficiencies—an insufficiently developed theory of social structure and social action on the one hand, and on the other hand a lack of methods for investigating the direct interplay between social process and psychological process. The second defect is obviously felt in its most acute form when the process studied is one that issues in death; the subject of our concern is put out of our reach by the very act that makes us wish to know and study him.

These difficulties have put many inquirers out of patience with the statistical method. Zilboorg, for example, wrote: "Statistical data on suicides, as they are compiled today, deserve little if any credence; it has been repeatedly pointed out by scientific students of the problem that suicide cannot be subjected to statistical evaluation, since all too many suicides are not reported as such. . . . It is obvious that under these circumstances the statistical data available cover the smallest and probably the least representative number of suicides: one is justified, therefore, in discarding them as nearly useless in a scientific evaluation of the problem." This is surely to set scientific demands too high for the needs of the social sciences. George Simpson, the translator of Dürkheim's book on suicide, takes a similarly disparaging view. "Until we have better records and more literate classification in terms of psychiatric nomenclature, we can draw few binding conclusions concerning regularity in terms of age, ethnic groups, social status, and other sociological variables."

Such counsels of desperation are unjustified. The basic sociological difficulties are being vigorously analyzed by theorists like Talcott Parsons who are giving to the concepts most relevant to suicide—anomia, for example, and social control—a better defined and ordered meaning. The relation or, as Parsons holds, mutual independence of personality, culture and social systems, is being recognized in methodological studies, and the conceptual systems used by the psychologist, the sociologist and the psychiatrist are gradually coming closer to each other, and so bringing us nearer to an understanding of the whole transaction or sequence that culminates in suicide.

The inadequacy of primary statistical data is unlikely to be wholly overcome: the figures will continue to be, perhaps to an unknown and varying extent, incomplete. They are therefore, if incautiously used, deceptive. But to discard them on this account would be misguided. Completeness, much less perfection, is seldom if ever attained in the collection of large-scale medical, demographic or criminal statistics; yet without these statistics biological and social studies could not have advanced as they have. The statistics of suicide, like those of alcoholism and psychopathy, are drawn partly from medical and partly from judicial and police records. Medical records, as we learnt for example in the Health Survey

carried out regularly in the United Kingdom between 1943 and 1951, can be of immense value, even when based on crude and inexact medical information, provided that the recognizable sources of error are taken into account when we are interpreting the data. Criminological statistics are subject to the same limitations, and are likewise informative. The statistics of suicide are not to be rejected, therefore, except by purists who will have nothing but the best, or by zealots who hold that the only useful knowledge about human behaviour is that derived from studying the psychopathology of individuals. There are, as has often been pointed out, three main elements, and therefore three main fields for study, in suicide: the individual personality, which is the outcome of biological endowment and cultural and personal experience; the conflicts which life in society entails; and the solutions which society offers or permits to such conflicts. In unravelling the complex relations in and between these, statistical methods play an essential part.

There is one other aspect of statistical inquiries into suicide which calls for brief reference. This is the reliance on study of co-variations. Durkheim, building on J. S. Mill's foundation, made this a paramount principle in sociological research. Its advantages are obvious once they are demonstrated, and the studies I have been mentioning exemplify them. It is necessary, however, to bear in mind the presuppositions of this method, which Nadel has lucidly expounded. It presupposes a hypothesis about the correlations that are likely to be relevant, a meaningful nexus between the social facts studied, and a good measure of agreement about the identity or dissimilarity of the social facts when observed in different contexts. These requirements are inter-related, but for the study of suicide the first is the most important. It is hardly ever profitable to collect statistics about haphazardly chosen social variables with no other purpose than to calculate their co-variation with suicide, and thence infer invariant relations which may be causal. This statement would seem self-evident, if there were not on record some statistical inquiries which were evidently governed by a sanguine expectation that significant relations can emerge from the analysis of indiscriminate data. The failure of such inquiries cannot be laid at the door of statistics.

It is in the formation of suitable hypotheses that clinical experience can join forces with the

social sciences, to explore the origins of suicide. "We always start with a suspicion or theory of significant connections, and not with the random search for co-variations which might prove significant. . . . It is therefore unlikely that the discovery of regularities in social behaviour precedes their understanding in the terms of psychological theories" (Nadel). The ensuing papers will, no doubt, illustrate this and remind us that statistical procedures are a tool that can be turned to many purposes. They may also show that statistical treatment of social, psychological and clinical data about suicide is as essential as skilled observation and penetrating insight.

#### SUMMARY

Statistical inquiries into suicide during the last hundred years have stressed the imperfection of available data and the consistency with which, nevertheless, the ascertained frequency of suicide remains regular in a given population over a period in which no great social changes have taken place. Durkheim's sociological approach to the problem has had lasting influence.

Two very recent studies in South East Asia—Murphy's in Singapore, and the Ceylon findings of Straus and Straus—illustrate the value of this approach. "Anomic" suicide is recognizable in the differential suicide rate for the ethnic groups in the mixed population of these areas. In such studies, and in Sainsbury's London material, suicide is seen to be much more directly connected with the relation of the individual to the community than with his economic status or the material conditions in which he lives, as shown for example by overcrowding.

These studies are hampered by defects of two sorts—in the ascertainment of social, medical and psychological data; and in social theory and methods. These defects are being made good, in ways that indicate the necessity for give-and-take between social-statistical studies and clinical or psychopathological studies of individuals. Only in this way can suitable hypotheses be developed.

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## SUICIDE\*

## PSYCHOPATHOLOGY

A. E. MOLL, M.D., Montreal

FOLLOWING the invitation to participate in the symposium on suicide, I sat one evening in the quietude of my study and allowed my thoughts to wing their way hither and yonder around this topic, only to realize that what at first had appeared to be a well-defined and circumscribed subject, in no time became a rather complex one, such as to lead me into various speculations about the mysteries of life as well as of death. Time and time again I had to remind myself that I had to prepare a clinical paper on the "Psychopathology of Suicide", and that it was necessary for me to curb my philosophical meanderings. And yet, to understand suicide one has to give due consideration to the attitudes which people, both "normal" and "abnormal", have towards the idea of death and of dying. As well expressed by Bromberg and Schilder,<sup>1</sup> "death is not a true opposite of life. Language is deceiving in this respect. Death does not have the meaning of the final experience. This is partially due to the fact that the deepest of human emotions are invested in the experiences and thoughts of death and dying. One's psychic structure is too deeply involved with death."

The meaning of death has been the object of numerous speculations throughout the ages, theology and philosophy, of course, having been the main disciplines concerned with the problem. Any average individual sometime or other during the course of life has given a thought to death, and even to suicide, though such thoughts are obviously much more frequent in individuals suffering from psychiatric disorders. Death has a different meaning according to

whether the patient is suffering from anxiety hysteria or from obsessional neurosis, from depression or schizophrenia. In the hysterics the meaning of death is mainly one of separation from the beloved one, and the main fear expressed by individuals suffering from neurotic anxiety is that of sudden death either of themselves or of another person to whom they are attached by a close emotional tie. Sudden death in such cases means a separation from the loved object, and suicide a means of reunition with that object.

Schilder and Wechsler in their study of the attitude of children towards death found that children are quite ready to accept the idea of death of others, since death to them is merely separation from the loved object and consequent deprivation. "And since the child's own deprivations are usually not of a permanent or lasting nature it is easy for the child to wish the death of others. This general attitude of children towards death may be found quite clearly in some neurotic patients, death in such cases being feared as a sudden removal." Bromberg and Schilder defined the meaning of separation due to death as separation in space symbolically represented

"by the religious fantasy of a soul being taken away from the body by angels to receive corporeal reality itself as an angel later. For the average person death is simply a cessation of existence, but infantile (primitive) and allegorical fantasies place another construction on the separation of the dead from the living. In Norse mythology one sees the same tendency, such as for instance, the Valkyries bearing dying warriors off the field of battle to Valhalla. Again, in the legend of King Arthur, the warrior is borne away on a watery bier to a land from whence he will emerge again when his countrymen need him. The Greek legend of the boatman Charon and the river Styx carries the same allegory."

This idea of separation from the loved object is a common fantasy among hysterics.

In cases of obsessional neurosis where aggression is discharged chiefly towards the external world, the idea of one's own death does

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not come into the foreground until more and more aggression is directed towards the self, in which case the fear concerning one's own death may become obsessional. Death, in such cases, becomes eternal punishment. "Death is not any more the separation in space, as in the hysterical group, but punishment by dismantling for an unlimited time. Eternal immortality is thus psychologically accomplished."

In cases of depression, "the idea of eternal destruction is paramount. Death is eternal destruction in time. The preoccupation with death ideas and the nihilistic delusion found in melancholias bring this out. In the latter type one meets again and again the idea of wide and eternal destruction. It seems that the feeling of guilt does not recognize limitation of time, but is indestructible and tends to perpetuate itself."

To the schizophrenic patient as well as to primitive people, death is not absolute, since for them only eternity exists. These authors suggest that the problem of death is closely connected with the problem of space and time. "We not only live in space and time but we project a change in the space and time relations in death."

Neither neurosis nor psychosis produces an attitude towards death which cannot be found also in the so-called normal, but neurosis and psychosis bring specific attitudes clearer into the foreground.

The analysis of the meaning of death attitudes amongst normal and abnormal individuals leads one to believe that in some people suicide fantasies are aimed at injuring society, a wife, a husband or other loved one, these fantasies representing unconscious death wishes. In other people such fantasies show a desire for increased love or punishment of persons in their surroundings, and in others again death has the meaning of the perfect union, a union with an ideal which could not be found in life.

An example of the latter is the case of the woman of about 60 who was admitted to hospital following a very serious and nearly successful attempt at suicide. Her beloved son had died in a rather unusual accident a few months previously. She had other children, but her attachment to this son was quite inordinate to the point of incestuous intensity. Her loss was so painful and so distressing that she actually denied to herself her son's death and daily spoke of him as if he was still living. It was only months later that this denial mechanism (unconscious) proved inadequate, and it was then that she attempted suicide. It is significant that once resuscitated she again spoke of her son as if he was still living.

The mode of suicide itself may give us some understanding of the motivations of the patient and of the fantasies which led him to such a drastic step.

Hendrick<sup>3</sup> illustrates a case of suicide as wish-fulfillment by the analysis of an unmarried professional woman of 38 who deliberately "rolled off" a high bridge very late one night into the icy waters of a large river with the intention of drowning herself. There was severe amnesia for the 16 hours preceding the episode. The only recollections of this experience were that she had left her home in her automobile early in the preceding morning. She had "driven in circles" all day. She had had nothing to eat. Late that night she had found herself on this unfamiliar bridge, several hundred miles from home, and left her car at the entrance of the bridge. She learned later that a passer-by had seen her fall from the bridge. She was rescued and hospitalized for two weeks. The subsequent six months she lived with her mother, avoided all people including her family, was unable to resume her work, and was constantly preoccupied with fantasies, anxieties and hallucinations of a predominantly schizophrenic type. A brother, two years her senior, had served as an airman during the World War, obtained the status of "ace" and had been shot down and killed in aerial combat. His heroic death was the final event of an unusually hero-like life. During childhood, school and college he had been idolized by family and friends, especially by his mother and the patient. Her brother was the only man she had really loved. During analysis she recalled that before leaving her apartment on the morning before she dropped from the bridge, she had decided to commit suicide by taking a boat to Europe and drowning herself in the ocean when exactly half-way across. She had prepared herself by donning special clothes, including a sweater of a special shade of blue. She had decided to arrange her death so that the family would not learn of it for two months and there would be no funeral. She recalled several forgotten incidents of the 16-hour drive, and very vividly the experience of driving for hours "round and round in circles". Her associations during the recovery of these memories showed that many details were reminiscent of the death of her brother. His plane was reported to have fallen in a wood and he had been buried there. (Actually, two years before this attempt, patient had attempted suicide by swallowing 20 Allonal tablets with suicidal intent and was found unconscious in a wood.) The special clothes she had worn after deciding on suicide were associated with tomboy activities which had been conspicuous traits of her childhood, and the shade of blue of the sweater approximated the shade she adored because it was the colour of a sweater worn while playing baseball with her brother. The idea that she would not have her death discovered for two months was the rationalization of the thought that her brother had died without a funeral and that the family had not learned of his death until exactly two months after it had occurred. Her memories of driving in circles and striking her ear on the water (she did not at first recall how or why she finally arrived in the neighbourhood of the bridge but remembered vividly striking the water on her ear) were now associated with vivid visualizations of the airplane falling in circles and striking diagonally on the wing. Thus the patient discovered that she had wished to die in the same way as her brother had died, that she had dressed in clothes associated with her childhood identification with him in playing baseball, that her two original plans for suicide were derived from the place he died in the woods in Europe, that the family would learn the news after the same interval of time which had elapsed after the hero's death, and that she had imitated the falling airplane in her 16 hours of driving in circles, and "remembered" striking her ear because the airplane's wing had struck the ground. In other words, this

patient wished to identify herself with her brother in the act of dying.

#### THE COMPLEXITY OF THE PROBLEM OF SUICIDE

This brief outline of some of the attitudes towards death amongst people serves to illustrate the complexities of the problem of suicide and the need to understand the emotional background of the patient, not only on the basis of his conscious life experiences, but also on the basis of the unconscious forces which often influence human behaviour just as powerfully as conscious dynamics, if not more so.

I am not minimizing the importance of stress-precipitating factors, be they physiological, biochemical or psychological, or of environmental, social, cultural and other numerous influences, but I am suggesting that caution be exercised in the interpretation of data and in arriving at conclusions which may be based on insufficient awareness of all the facts of the case. For instance, it has been asserted that there exists a definite relationship between the incidence of suicide and of certain weather changes.

"It is the very error of the moon,  
She comes more near the earth than she was wont,  
And makes men mad."

says Shakespeare in "Othello".

Mills<sup>4</sup> kept a day-by-day record of suicides and barometric-pressure readings for a period of five years in the Kansas City and Memphis areas, and found repeatedly that sudden peaks in curves for suicides coincided sharply with a low-pressure crisis. We all know that during periods of falling barometric pressure we tend to feel somewhat depressed and pessimistic, whereas during periods of rising pressure we tend to feel buoyed up and more alert; but it would be a rather rash conclusion to state that a falling barometric pressure is, in itself, an explanation of suicide.

Family trouble, pain, remorse, drunkenness, abject poverty and numerous other motives have been adduced as the determinant cause of suicide, but often what are called statistics of the motives of suicide are actually statistics of the opinions concerning such motives by people who are not necessarily equipped to determine the cause or causes of such a complex phenomenon and who, therefore, tend to explain the motive of suicide on the basis of a few hastily collected bits of information. Dürkheim<sup>5</sup> in his

sociological study of suicide aptly points out that as soon as some of the facts commonly supposed to lead to despair are thought to be discovered in the victim's past, further search is considered useless and his drunkenness and domestic unhappiness or business troubles are blamed, depending on whether he is supposed recently to have lost money, had home troubles or indulged a taste for liquor. Actually it is a known fact, for instance, that people who are suffering from acute physical illness and severe pain rarely commit suicide. There are, of course, exceptions to this general rule, such as the patient whom I was called in to see in consultation in one of the public wards of the Montreal General Hospital where he had been admitted following a determined attempt at suicide. A man of about 50, he was destitute, living in a room by himself, in constant pain and practically unable to eat because of an inoperable cancer of the throat. My psychiatric assessment was brief and to the point: I wrote, "So would I." It is significant that that was one of the few occasions in which I was complimented by my medical colleagues for having "common sense, even though I was a psychiatrist".

The absence of the idea of death in the minds of those physically ill and the frequency of it in the minds of the neurotics and psychotics appears to find confirmation in the frequently observed fact that the occurrence of physical disease may greatly improve the mental state of the melancholic. The patient suffering from melancholia who has been monotonously and with agitation accusing himself of being an unworthy person may cease to do so and may actually recover completely from the depression when overtaken by a severe infection or injury.

A female patient of about 40 has been subject to phases of severe depression lasting for a period of one to four months for the past 10 years, such depressions having required several admissions both to a general hospital and to a mental institution. This patient has also been subject to acute attacks of cholecystitis and cholelithiasis, but the gallbladder symptoms have always been absent during one of the phases of depression, and conversely they have always been present in the intervals free of depression. This case, like many others, poses a rather interesting problem when deciding whether the gallbladder should be removed or not. To date, a cholecystectomy has not been performed, but should the time arrive when surgery becomes imperative, there is a great probability that the patient will either become psychotic or that some other body organ will break down physically.

It is not sufficiently recognized that many of the physically ill patients seen daily in any one of the medical or surgical wards of a general hospital are there because the physical structure has given in instead of the emotional one. It is today common knowledge that careless psychiatric management of some patients suffering from ulcerative colitis may precipitate the onset of an underlying psychotic process.

A 50-year-old man was admitted to hospital in a comatose state following a determined suicidal attempt due to severe depression. He was treated by electroshock, the treatment of election in cases of endogenous depression. After the first treatment he complained of pain in the back, radiography showed compression fracture of two adjoining vertebrae, and it was decided to postpone further E.C.T. However, the patient's mental condition improved so promptly and so consistently that he was discharged from hospital without further treatment. This patient was followed up for several months and his improvement persisted. Other factors, of course, may have come into play in his prompt response to one E.C.T., such as, for instance, the reduction of guilt obtained from the self-imposed punishment, a psychological mechanism which is not infrequently met with in patients who try, unsuccessfully, to kill themselves.

#### IS SUICIDE ALWAYS AN IRRATIONAL ACT?

Does a normal person ever commit suicide, or is suicide always the act of an irrational human being? This question still remains unanswered. Some people believe that suicide can be quite a rational act arising from despair in a perfectly normal individual when exposed to great misfortune. Others believe that suicide can occur only in people who are, at least at the time, "unsound of mind". Sociological, religious and cultural factors all tend to affect the opinion of people in this complex matter. Throughout the centuries there has been a constant search for a specific pathological etiology of suicide. In his historical review Zilboorg<sup>6</sup> outlines some of the changing concepts on this topic. He points out that St. Augustine was one of the first to postulate suicide as a sin. "The Council of 452 A.D. decreed suicide as the work of the devil. Plato, almost 25 centuries ago, was inclined to believe that suicide was a dishonourable act since a citizen had no right to deprive society of his civic life without the permission of a magistrate. In the old days in England, the estate of a suicide reverted to the Crown, and the bodies of the victims were buried at crossroads with a stake driven through them in an attempt to pinion the 'evil spirit', thus preventing it from wandering about doing harm.

"The word 'suicide' was introduced to the law about 1700 A.D., coupled with the phrase,

'while temporarily insane'. The latter statement was added as a pious perjury on the part of the jury to save the family from poverty and disgrace. Examples of suicidal death are found in the earliest recorded history of people. Aristotle condemned the practice of suicide, but it was enforced by the Greek state for political and military offenders. Seneca, on the other hand, stated, 'If life pleases you, live; if not, you have a right to return whence you came.'"

Lewis<sup>7</sup> points out that suicide became more prevalent in Rome as the state became weak and corrupt, but it became less with the acceptance of the Christian religion, "the pendulum swinging so far in the opposite direction that the act became a crime against Church and State. The law in many countries even today considers suicide a crime, and this tradition of disapproval has transformed itself in modern times into belief that suicide is restricted to 'insane' persons." This conflict of opinions—conflict which also finds its expression in the ambivalence of popular opinion, suicide being looked upon with a mixture of contempt and admiration—reflects the wide discrepancy in the understanding of the psychodynamics of human behaviour, some people basing their judgment largely on external factors and on conscious motivations, and others on the deeper structures of the mind with emphasis on unconscious motivations.

Today, in the light of our improved knowledge of psychological mechanisms we, as psychiatrists, have learned to respect increasingly the powerful forces of unconscious processes, and we tend to challenge the assumption that suicide can be committed by a "normal individual". Lewis<sup>7</sup> concludes as follows:

"From the numerous unsuccessful attempts at suicide on record, from the prevalence of suicidal thoughts periodically appearing in many people who never take action, and from extensive psychoanalytic studies, one is justified in inferring that suicidal trends are present in practically all persons, but at least some of these reactions are different from actual suicide itself, which is a complex affair, appearing in its fullest expression only in those who have a particular type of integration in which the elements have a specific pathological orientation in the adaptive function."

#### PSYCHOPATHOLOGY OF SUICIDE IN DEPRESSIONS

In histology, one may avail oneself of the eyepiece of the microscope or of the lens having the lowest magnifying power in order to have

a fairly extensive view of the tissue under study, and more particularly of the relationships existing between the various structures, but because of the low magnification this method will not give us a clear view of the morphology and composition of any single cell. In the same way, in the study of suicide one may survey the field in an extensive manner and consider manifold factors such as cultural, economic, sociologic, climactic and numerous other ones, all of them having a certain influence in the etiology of suicide, but none of them clear enough to give us a complete understanding of its psychopathology. In the same way as a more accurate and more detailed study of the histological tissue requires a narrowing of the field of vision by the use of a highly magnifying lens or of the oil immersion procedure, the study of suicide requires the understanding of deeper psychodynamics, the acceptance of the existence of unconscious motivations and unconscious fantasies which can only be obtained by the use of specialized knowledge and technique. Let us, for example, briefly focus our attention on the mechanisms of suicide which come into play in the clinical diagnosis of depression. Today we believe that most suicidal persons are victims of strong and powerful aggressive impulses which they fail to express outwardly and which they consequently turn inwards against themselves. As expressed by Zilboorg:

"The person suffering from a pathological depression has a specific set of unconscious fantasies which determine his mood and his whole illness, and a characteristic emotional attitude towards the world which determines his behaviour. He identifies himself with another person whom he once loved and then hated. He then loves and hates himself and falls victim to this internal raging battle . . . . The subject is under the dominant influence of a fantasy that he has swallowed the once-loved and then hated person. He becomes that person and hurls the whole mass of his hostility on this internalized person. *The process of being hostile to the internalized person is perceived as depression, self-depreciation and self-hatred, while the act of murder of that person or persons is the act of suicide.*"

This set of formulations was originally conceptualized by Freud in his studies of melancholia. Indeed, in melancholia, the death idea seems to be related to self-hatred or loathing, the so-called symptom of "personal unworthiness". As stated by Freud:

"The self-reproaches with which the sufferers torment themselves so mercilessly, actually relate to another person, to the object they have lost or whom they have ceased to value on account of some fault . . . The ego itself is then treated as if it were the abandoned object.

It suffers all the revengeful and aggressive treatment which is designed for the object . . . The melancholic, in some cases, has experienced a *real* loss of money, position or love, but more often the situation is that they are infantile characteristics in his mental functions, and that there is a disillusionment in his experience of life. He ceases to attend to reality and complains that everything seems flat, dull, or he occupies himself with the 'might-have-been'."

In his "Theory of Instincts" he points out that "a person in a fit of rage often demonstrates how the transition from restrained aggressiveness to self-destructiveness is affected by turning his aggressiveness against himself. He tears his hair or beats his face with his fists, treatment which he would evidently have preferred to apply to someone else. It is this sadism, and only this, that solves the riddle of the tendency to suicide that makes depressions so interesting and so dangerous . . . no neurotic harbours thoughts of suicide which are not murderous impulses against others, re-directed upon himself."

This process of internalization of aggression takes place in very early childhood, and analysis of the melancholic demonstrates definite infantile characteristics in his mental functions. Much can be learned by studying the behaviour of children, particularly as regards the various methods of dealing with aggression. Some children, because of constitutional or early environmental factors, and/or because of different parental attitudes or other influences, seem to be able to express their aggression quite freely. Other children will repress their aggression and develop an unaggressive, if not completely passive or submissive, attitude in their relationship to other children or to adults.

The different reactions of twin girls of about five in their relation to each other may serve to illustrate this point. One of them is able to express her aggression towards her twin sister, frequently vocalizing her hostility by looking at her sister fairly and squarely in the eyes and stating, "You have an awful face—I hate you." The other one is more or less consistently kind and considerate towards her aggressive twin sister, eager to share her toys with her, and to protect her, notwithstanding or because of the attacks she is subjected to. It is obvious that aggression, if not hostility, is present in the latter child, but that the resentment and the sibling rivalry have been deeply repressed, as proven by her waking up one night crying. When asked what was the matter with her, she replied that she had had an "awful dream". This dream was in the nature of a nightmare in which she had seen her "beloved" sister in the family car, that the car had caught fire and that it had finally exploded—one way of getting rid of her sister whom, during waking hours, she appeared to love so much. It was only during sleep that she could allow herself to express her resentment towards her twin sister.

Hartmann states that "When the child reaches the stage in which he is himself dissatisfied with his aggressive outbursts, when his ego, or later his superego, already disapproves of aggression turned outward, the outburst solicits limitation from the parent as a

help in solving the internal conflict. If, in this constellation, the response to aggression is not the expected one—if the aggressor is disarmed by indifference, kindness or love—aggression has been frustrated. This type of frustration particularly favours one solution of the conflict, namely the internalization of aggression. This internalization, in turn, may contribute to an increase of guilt feelings."

It is interesting to note that the second twin whenever frustrated from the age of two on has often been observed to pound her head with her little fists. This phenomenon may explain why some children appear to obtain so much relief following a spanking. This child is also accident-prone. Obviously the answer to the whole problem is to deal with the situation so as to direct aggressive urges into constructive channels, and where possible to prevent an undue and excessive development of aggression which may become pathological in the form of "hostility".

All of us are endowed from early childhood, if not from birth, with a certain amount of aggression, but not all of us develop excessive hostility. Furthermore, each one of us, during the early stages of psychic development, makes use of specific methods of dealing with our own aggression.

In my clinical experience the reversal of hatred from an external object on to the self is of very common occurrence in cases of depression. The genius of poets has shown insight into this process. Adriana in the "Comedy of Errors" (Shakespeare) says of her husband who had been behaving strangely:

"This week he hath been heavy, sour, sad,  
And much different from the man he was;  
But till this afternoon his passion  
Ne'er brake into extremity of rage."

A male patient of about 50 was admitted to hospital following an acute psychotic episode of sudden onset, during which he had become quite irrational in his conversation and in his behaviour, pointing his index finger towards his wife as if holding a pistol and making clicking sounds with his mouth, as if he were shooting her. On admission he presented a mixed picture of depression and anxiety, repeatedly looking at the window of his private room, situated on the sixth floor, in a furtive manner as if hardly able to resist its attraction, but having sufficient insight to demand that he not be left alone even for one minute, obviously prey to very powerful suicidal urges. When asked how he felt towards his wife, he described her as a very kindly and considerate soul. All his hostility, in other words, hostility which the day before had threatened his ego to the point of harbouring homicidal motives towards his wife, had become repressed and reversed upon himself, or, to use another expression, had been "turned inwards".

A year before this acute psychotic episode, while felling a tree in his garden, he had suffered very severe lacerations of his skull when the tree fell on the top of his head. He had required several weeks' hospitalization. This patient was treated with rest and psychotherapy, and it was only after he started improving that allusion was made to this "accident", which even the patient found somewhat difficult to explain, particularly since he was not an inexperienced man, having worked as a lumberjack in his youth. His wife, when interviewed at this admission, also expressed some doubt as to how the "accident" had occurred, and certainly it was my feeling that this so-called "accident" might well have been an unconsciously determined suicidal attempt.

A male patient of about 55, a professional man of good intelligence but of an extremely rigid personality, was admitted to hospital for the investigation of an intolerable persistent pain in the right circumorbital region, a pain for which he had received a complete neurological investigation at another hospital without any definite findings of specific organic pathology. This pain had been present for a period of over two years. It was so incapacitating as to lead the patient rapidly to chronic addiction to analgesics. Neurosurgery had actually been considered without, however, much hope of improving the symptoms. After talking to the patient I interviewed his wife and then decided to see them together; and after listening to his wife's continuous verbalization of infantile frustrations and resentments, to an uninterrupted flow of words which allowed no intervention whatsoever on my part for a period of 45 minutes, I looked at her husband and stated, "Perhaps you are better off with your pain". His defences against very intense hostile feelings towards his wife were much too rigid to make psychotherapy hopeful. Furthermore, gain in insight on his part might have led to disaster, his symptom being a defence against a psychotic breakdown or against murderous intent. I therefore decided to treat his wife, hoping that the patient would have enough fortitude to withstand her onslaught until her mental state had improved. Actually, after the first few interviews I came to the conclusion that nothing but a lobotomy would prove successful, but before I could recommend such procedure on his wife, he committed suicide.

In my practice I am usually less concerned about the possibility of suicide when dealing with patients who, though quite disturbed, are nevertheless able to ventilate their hostility, but even in such cases much caution has to be exercised since hostility may at any time be reversed by the patient on to the self with dire consequences. This is particularly true in the case of patients who are irritable, stubborn, cold, contrary, sarcastic and stingy. As well expressed by Zilboorg, "The well-known childish faculty, 'When I'm dead they'll be sorry', finds its literal expression in their mental life, and their self-murder appears to be an act of aggression against the world, a real act of vengeance. The act of suicide in the fantasy life of these people appears to have a special pleasure value. Clinically they represent a rather treacherous problem, for such patients give the impression of constantly ventilating their sadism, and one is not infrequently misled into believing that they are 'too extrovert' to commit suicide."

A female patient of about 50, married but childless, was admitted to the Day Centre suffering from an agitated depression severe enough to warrant treatment in a psychiatric ward under constant observation. She had the personality traits described above, expressed marked fear of insanity, and proved most unco-operative. She refused admission to hospital, refused electroconvulsive therapy, and throughout her stay at the Day Centre she took exception to everything and everybody, criticized the treatment, the food, the bed linen, etc., refused to participate in occupational therapy and to establish any relationship with any of the other patients, and resisted every effort on the part of the nursing staff to have her socialize. In her interviews with me she expressed the same hostile reaction and finally, after two weeks, she refused to carry on with treatment and demanded her discharge. She also expressed much concern about the cost of treatment, even though special arrangements had been made by me to reduce the cost to a minimum. A few days after her discharge she was brought back to my office, much against her will, physically a wreck and mentally more in need of treatment than ever. She had lost much weight and had subconjunctival haemorrhages in both eyes. I became quite firm in my approach and told her that she had no alternative but to be admitted to hospital with special nurses round the clock and that she would be treated with electroconvulsive therapy. The day following the first E.C.T. she mentioned, for the first time, that she had been prey to strong destructive urges towards her husband such as to make her panicky at night, more so "when her husband was asleep", and to make her doubt her own sanity. The day following the second treatment she mentioned having attempted suicide at home, by hanging, which explained the subconjunctival haemorrhages. After a few more treatments the patient's personality changed; she became quite co-operative and very grateful. It is interesting to note that the more compromising my attitude had been toward her, the more kindly my approach, the more intense her hostility and consequent guilt and the worse her depression.

It is mainly for this reason that in the Winters V.A. hospital, U.S.A., the policy has been to treat deeply depressed suicidal patients not with kindness but with firmness and a certain amount of severity. The patients are also made to work, usually a dull type of physical labour, such work symbolizing punishment and thus relieving the patient of the need to punish himself by suicide.

From the above, one may formulate the hypothesis that in some cases suicide can be considered a defence against homicide.

"The turning of one's aggression on oneself, legitimized and honoured in some civilized races such as those of ancient Rome and of present-day Japan, has obviously great sociological meaning, as it may perform a social preservative function. The individual dies because aggression is forbidden to him, but the community takes care of the business of revenge. One wonders to what extent this aspect of social development may not be responsible for the tradition of respect many persons have for suicides, and for the idealization of the death wish by the suicidal psychotic or neurotic person." (Zilboorg)

#### SUICIDE IN SCHIZOPHRENIA AND OTHER CONDITIONS

There is practically no psychiatric condition in which suicide may not occur, though suicide

is most common in patients suffering from severe depression. Zilboorg points out that not sufficient emphasis has been given to the schizophrenic group as potential suicides since these patients are less apt to give as much warning as the depressed patients, and yet their persistence in suicidal attempts is even greater than that of depressed patients, and their impulsiveness frequently results in a fatality rather than in an unsuccessful attempt. Schizophrenic states often start with a depression which, being associated with confusion, presents the most dangerous type from the standpoint of suicide. Actually, in some schizophrenics the motivation for suicide at times may assume the strength of such a driving compulsion that it can defeat all precautionary measures.

A female patient of over 60 in the observation ward of a large mental hospital told me that she was going to commit suicide because she felt persecuted by auditory hallucinations—her husband, long dead, talking to her and calling her "dirty names". The nurses of the ward were warned and instructed to take extra precautions, and yet this patient somehow managed to get hold of a belt and hang herself by kneeling by her bed.

Lewis points out that the danger of suicide is also great in cases of acute homosexual panics, either with or without alcoholic relief, but in which the hallucinatory experience drives the patient to self-destruction to avoid the certain disgrace and torture implied by the hallucinated persecutors. Leavitt reported a case of suicide of a captain who had been arrested because of homosexuality. This man drove a nail 8 cm. long into his brain through the parietal lobe, using a wooden shoe for a hammer. Two nails bent before he succeeded. He presented very few symptoms before the terminating meningitis set in.

Conversely, there are cases of attempted suicide which are meant to fail from the start. These are the so-called "suicidal gestures" which are frequently motivated by the desire for additional or special attention. Even in such cases, however, death may occur because of a fortuitous set of circumstances, and the cause of death is erroneously declared as "suicide".

A married woman of 35 was admitted to hospital by ambulance in a comatose state following ingestion of a large amount of barbiturates. She remained unconscious for 48 hours, and it was only through concerted efforts of the medical staff that she recovered. She gave a history of several previous attempts, all of which had failed because her husband, well-known for his punctuality, had arrived at home in time to institute adequate measures. On this occasion, however, he had been de-

tained at work later than usual, a very rare event in his case, and when he arrived home he found his wife in a desperate condition.

#### PARTIAL OR FRACTIONAL SUICIDE

Partial self-destruction is not an uncommon phenomenon. In such cases the self-destructive act is discharged, not upon the body as a whole but on one or more parts of the body, for instance, in self-mutilation, in poly-surgery and in unconsciously motivated accidents. It is possible that there may be similar unconscious motives in all such cases. Some investigators consider these acts as a method of localizing punishment for the purpose of carrying on the indulgence for which the punishment is inflicted.

A young girl of about 20 was admitted to the surgical ward of the general hospital with severe infection of her right hand, necessitating the amputation of two fingers. About a month later she had to be readmitted, again for an infection of the same hand, and this time the whole hand had to be amputated. Within a period of a few months she required three other admissions, each one of them leading to further amputation, up to surgical removal of the whole arm. At her final admission she was admitted practically moribund because of a very severe infection of the shoulder. At each admission clinical investigation could not find any explanation for her re-infections. She was referred to psychiatry, but she proved most unco-operative and refused psychotherapy. She did, however, co-operate to the extent of giving me a brief outline of her history, which was as follows:

She was married and, she claimed, quite happily, until one day her husband came home accompanied by another woman and demanded that this woman also live in the house as his wife. The patient who, up to that time, had been rather passive and submissive in her relationship to the husband, was seized by sudden rage and slapped her husband's face. Following this act she felt terribly guilty and she left the house to live with her mother. She took a job in a can factory and shortly afterward she "accidentally" cut her finger. Contrary to all instructions she did not report the injury to the company doctor until several days later, when the infection had become so extensive that she had to be admitted to hospital with consequent removal of two fingers. The successive infections of the stumps were self-induced, and nothing could stop the inevitability of her death.

Some authors have extended this concept of progressive self-destruction to include other pathological conditions, such as drug addictions, since addicts in their general mental attitudes show a great indifference towards a slow progressive destruction.

A recent campaign has stimulated research into the causes of traffic accidents. Over two-thirds of such accidents have been ascribed to human errors. It is suggested that in such research consideration be given not only to conscious factors, but also to unconscious motivations. Menninger considers suicide as a peculiar

kind of death, having three distinct elements for each of which there appears to be always unconscious and sometimes conscious motivations: (1) the element of dying; (2) the element of killing; and (3) the element of being killed, "Suicide is not a consciously deliberated, quickly executed, completely and directly achieved act, but more often a slow, gradual, irregular and indirect procedure." He extends this concept to explain the etiology of some physical illnesses:

It would certainly seem to be a short step, logically, from these generalized and focalized self-destructions, brought about through external devices, to those internalized and destructive processes, general or focal, which constitute the substance of all medical practice. If deep unconscious purposes are found to lie back of the impulse to gouge out one's eye or cut off one's ear, may it not be possible that the same deep purpose sometimes finds expression through physiological mechanisms in diseases which attack the eye or the ear? We have seen how some people rush to get one organ after another removed surgically, and how this compulsion to sacrifice an organ has self-destructive determinants, determinants which are quite unconscious, concealed by being ostensibly self-preservative. Is it not a justifiable inquiry to learn just when this focalized self-destructive impulse took form and began its work?

Self-destructive tendencies have been the object of study, but most studies had assumed "the modality of the striated musculature and the voluntary nervous system. . . . Each man has his own way of destroying himself. Some are more expedient than others, some more consciously deliberate than others. Perhaps organic disease is one way. . . . We know that the deep insistent cravings of the personality are transmitted in various ways to organs as well as to muscles. The transmission may be chemical or physical, i.e., by hormones or by nerve fibres. It is theoretically possible, therefore, that impulses arising from a trend towards, or basic purpose of, self-destruction might be conveyed to the autonomic nervous systems and carried out through the non-striated musculature, as well as in the more familiar form of voluntary nervous system, impulses sent to striated musculature. This, then, would result in the injury of an organ. . . . Study of the personality often shows that the 'organic' disease is only a part of the total personality disease and fits into a pattern which seems to have the definite purpose of destroying the self. It may even happen that a functional and an organic disease may exist side by side, both serving the same need, as it were, or that one may replace the other as the malignancy of the self-destructive impulses wakes, waxes or wanes. . . . We know that

often what appears to be an accident is a definite intention of the victim. People *elect* misfortune, they *elect* misery, they *elect* punishment, they *elect* disease; not always, not all people, not all diseases, but this is a tendency to be dealt with. . . . The self-destructive and self-preservative tendencies appear to carry on a continuous battle in the unconscious and this battle is reflected in the psychological experiences and sensations as well as in the organic processes. The physical and chemical interactions we know somewhat more about. It would appear that these unconscious, self-destructive tendencies at one time are manifested through conscious, volitional expressions, and at other times through unconscious attacks on the internal organs or some part of the body. Sometimes there is a joint expression of both."

#### CONCLUSION

The study of the psychopathology of suicide demands an understanding of unconscious psychodynamics as well as of conscious phenomena.

Suicide represents a man's total retreat from the vicissitudes of life, a failure in his mechanisms of adaptation and an escape from all reality, but it may also represent the achievement

of fantasies or wishes which transcend the concept of death as a final experience.

Our psychic structure is so deeply involved with death that Freud postulated the existence of a death instinct as well as of a life instinct; that is, that equal to the will to live and opposed to it there is a death instinct which operates silently and mostly unconsciously in all of us. It would be beyond the scope of this paper, and indeed presumptuous on my part, to discuss the validity of this theoretical concept except to emphasize the need of not considering suicide as just "an act" or an isolated event in the life of an individual, but as a culmination of events, both conscious and unconscious, which in all their various aspects have been responsible for the individual's faulty adaptation to life.

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#### THE TREATMENT OF SUICIDAL ATTEMPTS\*

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IN PLANNING treatment for the patient who has attempted suicide, perhaps one's first thought is that the prime consideration should be the prevention of further attempts, and particularly of suicide itself. But we cannot be sure that the treatment of most such persons is really a "life-saving" manoeuvre. It must first be ascertained what segments of the population contemplate suicide, fear, threaten, attempt and accomplish it. Recent studies, particularly by Stengel<sup>1</sup> and Batchelor,<sup>2-5</sup> indicate that these segments are

not identical, and perhaps are not even greatly similar.

It appears that most persons who commit suicide have not been known to attempt it before, and likely most have not even threatened to do so. This may lead to the assumption that the patient sincere in his self-destructive intent quietly contrives to succeed the first time; and even to the assumption that in some way "suicide attempt" immunizes one against this mode of death. The small percentage of people attempting suicide who ultimately succeed lends credence to this—for example, 2% of Batchelor's series in one year's follow-up.

It must be remarked, however, that these studies are of hospital admissions, and thus the patients received appropriate psychiatric treatment and protection. This is our responsibility to all persons who attempt suicide, recognizing that in this group we are likely dealing with a larger proportion without strong motives for

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self-destruction, and a smaller group who really tried to kill themselves but for one reason or another failed this time.

"Suicide attempt" is a symptom. One cannot thus consider treatment in specific terms any more than one can consider the treatment of abdominal pain. There are many personal psychopathological and social conditions of which suicide and "suicide attempt" may be a symptom. The specific treatment of the patient comprises the treatment of these causative conditions.

It can be said in general terms that the attempt must be considered to be a medically serious matter, representing as it does a greater or lesser breakdown of self-preservative ego function, and to a greater or lesser degree a plea for help.

The recognition of suicide attempt is in most instances not difficult. We are called to see a patient who has taken an overdose of sedative, has cut his wrists or throat, has jumped from a height, or has performed some similar self-destructive act which he more or less readily admits. At other times, a prolonged interview with patients and relatives is needed before even this diagnosis can be reached. The patient may not recall what has happened. He may protest that he took the pills by mistake or to "get a good sleep". Unexplained automobile and other accidents, too, require careful study of the circumstances and particularly an historical account of the patient's mood and behaviour and his relations with his environment just preceding the injury.

Actually it is difficult to define the periphery of that group of phenomena which should be included in the designation "suicide attempt". This is not surprising in view of the fact that "suicide" itself is not readily defined. All actively masochistic acts, having self-punishing motivation and being potentially self-destructive, might be considered to be "suicide attempts". But also passive behaviour, most notably refusal to eat and refusal to have treatment for a known serious disease, may surely be suicidal in motivation and result.

For this discussion I shall consider "suicide attempt" as a deliberate act of physical self-injury. It is implied that the patient knows that the injury may cause death. The likelihood of this outcome varies in a spectrum from the attempt that barely escaped succeeding, to minor

damage that only in exceptional circumstances could cause death. This latter might better be termed a "suicidal gesture."

All patients who attempt suicide, at least following the initial attempt, should if possible be admitted to a general hospital with psychiatric facilities, or to a psychopathic ward. In some cases, hospital admission is imperative because of the extent of injuries. Apart from this, one cannot, on rapid examination in the office or in the casualty room of the hospital, decide whether the attempt was sincere or not. Though some studies indicate that the method used, the social setting of the act, and the extent of physical injury show statistical differences between the "sincere" and "gesture" groups, a determined attempt in a deeply depressed patient may have been poorly executed from ignorance or extreme anxiety. The weighing of the factors of self-destruction and what Stengel calls the "appeal character" is, in many cases, difficult. We often cannot tell, especially immediately, what the patient really wanted to do. What he reports regarding his motives may be misleading. Fear of police action, which I shall discuss later, or of mental hospital commitment may modify his communication, and indeed often he cannot at once clearly reconstruct his motives.

Another danger of quick assessment lies in the fact that the attempt itself may temporarily relieve a severe psychotic depression. This should not lead to the conclusion that often the attempt cures the disease. It may do so, but this depends on many factors, some inherent in the environmental reaction to the suicidal act. Our experience is that it more often than not has no lasting ameliorating effect on a psychosis.

The other reason for hospital admission and thorough study of all cases is, of course, the circumstance that we are not interested merely in keeping people from killing themselves. The patient with a personality disorder whose motivation is largely one of spite, or a desire to draw attention to his social condition, is equally in need of sympathetic study and treatment.

A psychiatrist should be asked to see the patient early. Immediate treatment may be indicated. In some cases the psychiatrist is required to work alongside the surgeon and internist so that the physical injury can be treated adequately. A psychotic depression will not only cause a continuing risk of further

suicidal attempts in hospital, but may also interfere with proper treatment of injury.

I shall not deal with the psychiatric and psychological study of the suicidal patient, which is similar to that of any emotionally disturbed person. By this study a diagnosis will be made, and it is to be hoped that the dynamics involved will be uncovered. At the Winnipeg General Hospital we are about to begin an investigation similar to that of the 200 cases Batchelor has studied so exhaustively. In the patients admitted to the observation ward of our hospital, the commonest diagnostic groups are psychoneurosis, psychopathic personality and psychotic depression. The continuing problem of semantics plagues us in comparing figures, because the label "depression", psychotic or neurotic, can be superimposed on either of the first two categories. It appears, however, that more than half of our patients are not psychotic either before or after the attempt.

A typical patient, if such can be selected, is a young woman, emotionally unstable and in an unhappy marital situation, who, while drinking on Saturday night, or in response to her husband's drinking, first threatens and then attempts suicide. "Psychopathic", "psychoneurotic" and "depressed" are all descriptive terms which might be used in such a case.

Less common, but still numerically important, are patients with psychotic depression of the manic-depressive or involutional type or in the senium. More rare are schizophrenics, and a large series of cases may be expected to include examples of almost every type of psychiatric illness.

The treatment of these conditions cannot be dealt with here and includes, of course, physical, psychiatric and social therapy. At least until psychiatric study is completed, the patient must be observed closely and cared for on the ground floor or on a ward with protected windows. One can almost never justify quick discharge home when the wound has been sutured and the patient has promised "not to be so foolish again". It is important that he remain in hospital at least for the few days or the week needed for psychiatric assessment. At the end of this time the neurotic patient, who acted impulsively in response to environmental stress or frustration, will have regained his equilibrium and rehabilitation plans can be made.

Those more deeply disturbed will commence what specific treatment is indicated, and if necessary, may be transferred from the general hospital to a mental institution.

In planning rehabilitation, the evident factor of social isolation in contributing to suicide attempt, especially in the aged, makes particularly important the re-establishment of social relationships. The attempt, perhaps with a strong motivation of changing these conditions, may, in the face of failure to do so, eventuate in a determined self-destructive act. It is difficult to relate "social change as a result of the attempt" to "prognosis", but, until more is known, every effort must be directed toward re-establishing the patient in a social group in which he can function effectively. In some patients, the weapon of a threat of suicide now has great force in manipulating family and doctor. The handling of this depends on the treatment of the basic personality disorder, and often involves a small calculated risk of actual suicide, to avoid permitting the patient to use this threat indefinitely in an immature tyrannical manner.

Another consideration in treatment is the attitude of law-enforcement agencies. This is one aspect of the more general and controversial subject of the relationship between the doctor and the police.

The matter is relevant here, because attempting suicide is, in our culture, both a moral sin and a legal crime. It is punishable by jail sentence, yet in this instance the criminal is almost never proceeded against. The general problem of the doctor's obligation to report crimes and illness endangering others was dealt with recently by Dawson.<sup>6</sup> An extreme difference of opinion is voiced here concerning the doctor's sometimes conflicting obligations, on the one hand to his patient, and on the other to the community as represented by the law. The legal code on the matter varies from country to country and it is possible that the prevailing medical attitude fluctuates. A recent editorial,<sup>7</sup> entitled "Report Violence to the Police", deals specifically with suicide attempts and urges that it is the doctor's obligation to report all such cases.

It is possible that some persons of psychopathic personality, attempting suicide repeatedly and refractory to all other care, considering our present inadequate means of treatment, might

benefit from the discipline of court appearance. However, I am sure that many cases are rightly not reported. As professional persons we are expected to use our discretion, and this almost always would lead to our concluding that informing the police would serve no useful function, and might be harmful to an already guilty patient.

However, most of these cases are already known to the police, who, being called by interested persons, bring the patient to the casualty room of the hospital. Though there may be no legal obligation, many hospitals report all cases of more than minor injury, whether caused by the violence of the victim or by others. The reason for this is their belief that what seems to be a self-destructive act may have really been caused by an assailant, this fact being concealed by the victim.

Often, even when the deed is known to the police, their direct contact with the patient may be avoided. A verbal medical report that he obviously himself caused the injury, and is under treatment for this, closes the matter, no police interview or court appearance being necessary.

As mentioned earlier, much remains uncertain concerning the common and disparate characteristics of the segments of the population that attempt and that accomplish suicide.

However, one may mention certain illnesses in which it is especially important that we conduct our treatment with this risk in mind, since in this group suicide attempts are common and are commonly successful. There can be claimed no statistical respectability for this group, since after a suicide we usually cannot reconstruct the true motives or the psychiatric diagnosis. However, clinical experience leads to the belief that the risk is particularly great in the following types of patient:

Firstly, patients with psychotic depressions of all types, but especially those accompanied by psychomotor overactivity. Here electroshock therapy is most useful. One must be cognizant of the depression masked by somatic complaints or presenting only as persistent insomnia, especially in the aged. Many factors conspire to make suicide a risk in elderly patients, especially if it is a male with the liabilities of social isolation and physical incapacity. Important too are depressive illnesses in women, particularly in the post-partum or involutional period and which have responded to electroshock treatment

and then relapsed. If the patient identifies closely with a deceased relative, this makes the risk even greater.

Secondly, the occupationally and socially frustrated adolescent epileptic boy who shows a marked reaction of hostility, particularly towards his parents. He may make an impulsive suicide attempt. The "spite" and "appeal" motives are paramount, but one suspects that here vital statistics underestimate greatly the frequency of successful suicide.

Thirdly, alcoholics, narcotic addicts, and psychopaths, particularly if these conditions are combined, and if for any reason confinement in jail is necessary.

Finally, the patient awaiting accommodation in a psychopathic or mental hospital. If he is markedly disturbed emotionally it is often wise to delay telling him of the pending admission until a bed is available.

In these groups of patients, study after a suicide attempt will often reveal a strong drive toward self-destruction. Consequently it is proper to assume that, at least in these, careful management may prevent a further determined attempt and thus be life-saving.

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#### MITRAL COMMISSUROTOMY: EVALUATION OF 400 CASES

Two physicians from Paris evaluate their experience with 400 cases of mitral commissurotomy performed at the Broussais Hospital (*Presse méd.*, 63: 1361, 1955). They do not advocate operation on patients with good function; they find that they have gradually extended their indications to patients over 50 years old, those with right ventricular failure and those with multiple valve lesions dominated by mitral stenosis. Auricular fibrillation, mild fever, and peripheral embolism are not regarded as contraindications. The authors consider that a very wide commissurotomy is necessary and find a mitral dilator of great use. Their operative and post-operative mortality is 7% and has remained at this figure for four years. This is because improvements in technique have to be balanced against increased inclination to operate on more severely ill patients. Good results were obtained in two-thirds of cases.

THE SOCIAL EFFECTS OF  
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THERE HAVE BEEN some notable changes in the trends of suicide research since this subject was last discussed at an Annual Meeting of the British Medical Association in 1931. The first has been the application of the psychoanalytical method and theory to the study of suicidal acts. The other has been an increasing interest in attempted suicide. The retrospective collection of psychiatric data about people who killed themselves has long ceased to yield new knowledge, but psychiatrists have turned to the study of attempted suicide reluctantly because these cases are looked upon as an inferior material from the point of view of suicide research. Survivors of suicidal attempts tend to be regarded as people who have bungled their suicides or who were not serious about them. Even psychiatrists speak of successful and unsuccessful suicide. No wonder that research into attempted suicide has closely followed the routine of suicide research. There has been the same tendency to look at statistics as an oracle to be consulted whenever a problem arises. There are, of course, several aspects of suicide which can be better studied in attempted suicides, such as motives and intent, or the role of a disturbed child-parent relationship in the origin of suicide-proneness.

It is a measure of the relative neglect of research into attempted suicide that only very recently the important problem of the incidence of suicide among those who had attempted suicide before has received attention. Dahlgren<sup>2</sup> of Malmo followed up a series of cases, and similar studies have been carried out in London by myself in association with Cook and Kreeger (1952), by Pierre-B. Schneider (1954) in Lausanne, by Schmidt and his associates in St. Louis (1954), and by Batchelor (1954) in Edinburgh. The periods covered by these follow-ups are still too short for definite conclusions to be drawn, but it can be said already that only a small or very small minority of those who are known to have attempted suicide finally kill themselves. This is in keeping with the observa-

tion that among suicides a small proportion only are known to have attempted suicide before. (It would, of course, be very interesting to know the suicide rate among those who have attempted suicide. Pierre-B. Schneider has tried to do this but he mistook the suicide ratio among attempted suicides for their suicide rate. In fact, it is well-nigh impossible to calculate an index of the type of the suicide rate for such a group.)

It is too often taken for granted that, by and large, people who commit and those who attempt suicide can be viewed as one population. There are considerable differences between the two groups. Women have been found to be in the majority among attempted suicides but in the minority among suicides. Attempted suicide appears to be comparatively more frequent among the younger age groups than suicide. As to the size of the two groups, in spite of what has sometimes been said about suicide rates, it can be assumed that the cases on which they are based constitute the large majority of suicides and that the available samples are representative. The same cannot be said of the suicidal attempts which come to our knowledge. Some workers believe that the total of admissions for attempted suicide to hospitals of all types does not fall very short of the incidence of attempts in the area concerned, and most workers are confident that at least they are representative samples. Both these assumptions are very doubtful. There is plenty of evidence that the attempted suicides admitted to hospital constitute only a fraction of the real incidence. Their number is usually about equal to or not greatly in excess of the incidence of suicide in the area concerned. The estimate that attempted suicide is at least six times as frequent as suicide (1941), based on observations made in two American cities, sounds more realistic though it probably is still too conservative. If this is the case, the representative character of the admissions to hospital, which would constitute only a minority of the real incidence, becomes very uncertain. But there are other reasons for doubting it. I want to mention only one. Among suicides, higher socio-economic groups are more heavily represented than the lower classes (Weiss, 1954; Sainsbury, 1955). This has not been the case among our patients admitted to public psychiatric and general hospitals because of suicidal attempts, and I do not expect the material of other workers to differ from ours

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in this respect. Unless the representation of the various socio-economic classes among attempted suicides is the opposite of that among suicides, which is highly improbable, we have to assume that a large proportion of suicidal attempts eludes us. We cannot, therefore, be sure of the representative character of the groups available. The factors which lead to admission to hospital after a suicidal attempt are very complex and variable, even in one and the same case on different occasions. The degree of damage inflicted is only one of them. All these considerations should be a warning against too confident generalizations from statistical data obtained from material on suicidal attempts to which we have access.

We can safely assume, then, that attempted suicides are much more numerous than suicides, that the groups differ in several aspects from each other, and that only a small proportion of the former enters into the latter group. There is much to be said for treating them as two populations epidemiologically, in spite of the absence of a clear demarcation and in spite of what they have in common from the psycho-pathological point of view.

There are still other reasons why the suicidal attempt merits special consideration. We want to look at it as a behaviour pattern and not view it as an act whose only purpose is self-destruction, and which in the large majority of cases fails in this purpose because the person is either too well or too ill or not sincere or determined enough to kill himself. I believe that by having made death the hallmark of success and the only legitimate outcome of a common and varied behaviour pattern such as attempted suicide, we have deprived ourselves of full understanding of its significance. There are many features which, though regular parts of the behaviour pattern of attempted suicide, do not serve the purpose of self-destruction. There is a social element in most suicidal attempts. Once we look for it we find it without difficulty. There is a tendency to give warning of the impending attempt and to give others a chance to intervene. Those who attempt suicide tend, in the suicidal act, to remain within or to move towards a social group. In most suicidal attempts, irrespective of the mental state in which they are made, we can discern an appeal to other human beings. This appeal also acts as a powerful threat. We regard the appeal character of

the suicidal attempt, which is usually unconscious, as one of its essential features. This particular quality has been generally recognized as a feature of the suicidal attempts of hysterics and certain psychopaths, and it is often very obvious in these cases. But it is inherent in the suicidal attempts of others also. Every one of us has seen many suicidal attempts among schizophrenic and depressive patients when the threat to life was so small that, had the patients been neurotics or psychopaths, they could have served as typical examples of insincere or even faked attempts. In these cases the facile explanation has been advanced that they were too ill to make a success of their suicidal attempts. I have, on the contrary, often marvelled at the circumspection with which those very sick people appear to balance the danger and the safety devices in their very genuine suicidal attempts. This takes us to another feature of the suicidal attempt which may be called its ordeal character, the term ordeal being used in its original sense, i.e. of a trial in which a person submitted himself, or was subjected, before the community, to a dangerous test the outcome of which was taken as divine judgment. The so-called failure of a suicidal attempt is usually accepted without demur, at least for a time. To prevent misunderstandings, I should like to make it clear that I fully agree with those who have emphasized the aggressive nature of suicidal acts.

Once we have dropped the idea that most suicidal attempts are nothing but unsuccessful suicides, many interesting questions arise. What are the effects of the suicidal attempt on the person concerned and his group? If it had been the result of inner conflict, what happens to that conflict? If it was motivated by a crisis of human relations, are they modified by it, and if so, how? Sociologists have told us that suicide is due to social disintegration and isolation. Is this true for suicidal attempt also, and if so, are those social conditions modified by it? If self-destruction is not the only purpose of attempted suicide, what is the function of this behaviour pattern in our society? We have been studying these questions at the Institute of Psychiatry in London since 1951, and a monograph reporting our findings to date has just been completed. I can on this occasion refer only to some of our results.

We found that among the 138 patients admitted to a mental observation ward in the course of twelve months, 31, i.e. 22%, had been living in isolation, which came near to the proportion found by Sainsbury among suicides in London, and was about three times the rate found among the general population. A follow-up carried out five years later revealed that 5 of those 31 had died within two months after admission, and that 6 had remained in a mental hospital. The mode of life had changed in 5 cases, the change resulting in an end of their isolation. In 11 cases the mode of life had remained unchanged but there had been improvements in contacts in two of them. Four patients could not be traced.

The social constellation in the situation of the suicidal attempt was studied in several groups, of which I want to mention only one. Of 147 unselected patients admitted to a mental observation ward after attempted suicide in 1953 only 44 were alone during the attempt. The rest were together with or near people. Forty of the total moved towards people during the attempt. In a comparable group of suicides the percentage of those who were alone and not near people at the time of the act was almost double.

The psychological and social sequelæ of the suicidal attempt for the individual and his group had never been studied when we started our investigations in London in 1951. There is one exception only, i.e. the occasional immediate therapeutic effect of the attempt on the mental state, especially on depressions, which has been known to psychiatrists for a long time. We have studied two series of cases so far. We interviewed the patients and their relatives and endeavoured to gain insight into the development of their human relations since the suicidal attempts, with special consideration of the influence the latter might have had on modifying them. It was often difficult to arrive at conclusions, for various reasons. We had to be on our guard against associating changes in a person's human relations to the suicidal attempt indiscriminately. Secondly, in many cases it was impossible to say whether some of the changes had been due to the suicidal attempt or to the underlying mental disorder. In the large majority of cases studied by us the suicidal attempt resulted in temporary hospitalization and treatment, while in some it meant removal

from the scene of conflict only. These surely are highly significant changes in a person's relationship to his environment, however temporary. In more than half of those hospitalized, the condition requiring hospital treatment had existed for some time untreated. In these cases the suicidal attempt had caused the patient to be admitted to hospital and to be given appropriate treatment. This often happens in depressives and schizophrenics, but occasionally also in other conditions. The following case is an example of this important function of the suicidal attempt. A man of 33 had married a girl who was pregnant by him, although his attitude to her had been ambivalent. He had been anxious for some time, and four days after the wedding he developed a state of panic and confusion in which he cut his wrists. He lost a considerable amount of blood and waited for death to come. When nothing happened he went to the police and was taken to the observation ward, where he was found to have general paresis. Six months later he was discharged from hospital recovered. He had in the meantime become reconciled with his marriage, and his relationship to his wife has remained satisfactory. Why should we not call this a successful suicidal attempt? It is true, it failed in its purpose of self-destruction, but it fulfilled its function as a signal of alarm and as an appeal for help admirably. Not all attempts have such unexpected and gratifying results, but many of them achieve temporary or permanent changes in the person's life situation which fail to impress us greatly, either because they are so common or because they are so subtle.

There was a group of patients whose attempts had been the last endeavour at controlling their fate before finally surrendering to the symptoms of their mental illness. Those were the ones whose admission had resulted in permanent hospitalization. There were others who aimed at forestalling death from physical illness.

Where it was possible to relate changes in human relations directly to the suicidal attempt the following sequelæ were found: changes vis-à-vis a special person, usually resulting in mutual concessions and in an improvement of crumbling relationships; the final breaking up of threatened human relations; a greater dependence, emotionally and materially; a change in the patient's mode of life or in the mode of life by a member of his group. The following

tables give an example of the frequency with which some of those effects were found in one of the series of cases studied.

Of 138 patients admitted to a mental observation ward in London the suicidal attempt which had caused their admission resulted in temporary hospitalization and treatment in 97 cases

TABLE I.

EFFECTS OF SUICIDAL ATTEMPTS IN 138 CASES	
Temporary hospitalization and treatment.....	97
Permanent hospitalization.....	21
Death within 2 months after admission.....	12
Removal from the scene of conflict.....	8
(Suicidal attempt secured treatment.....)	(58)

(Table I). In 21 cases hospitalization was permanent, while in 12 cases admission was followed by death not attributable to self injury within two to three months. In 8 cases the suicidal attempt had achieved a temporary removal from the scene of conflict only. These were patients who were discharged from the observation ward within two weeks. Table II illustrates the various types of changes in human relations observed where it was possible to relate them to the suicidal attempt. It also shows the proportion of cases in which the suicidal attempt had failed to prevent separation, the threat of which had played a part in the causation of the suicidal act. In these cases the attempt had the effect of finalizing an unwanted develop-

TABLE II.

CHANGES IN HUMAN RELATIONS ATTRIBUTABLE TO THE SUICIDAL ATTEMPT	
Changes vis-à-vis a special person.....	27
Break.....	5
Finalizing of separation, loss or break.....	9
Greater dependence.....	4
Change of mode of life by patient.....	10
by others.....	3
Community aid roused.....	11

ment. There was a group in which community aid of a material and moral kind had been roused as a result of the attempt. In some the attempt had resulted in no change in social relations. One would expect this group to be bigger in a series of cases with a smaller proportion of mentally ill. There were two cases in which the attempt caused invalidism and thus permanently transformed the patient's life. There was a sizable group of patients whose mode of life had changed as the result of the

suicidal attempt. They gave up living in isolation, or changed their work. In a number of cases the suicidal attempt had caused members of the family to change their mode of life. An example would be the wife who stopped going out to work to look after her physically sick husband, or the husband who changed his employment in order to be nearer or more often with his wife.

There were many more cases in which the patient's relationship to his environment had changed after discharge from hospital, but in these it was impossible to decide how much was due to the suicidal attempt and how much to the change in the patient's mental state after treatment and to the mobilization of social aid called forth by the illness.

Among the whole group of 138 cases, subsequent attempts were known to have occurred in 22. Only one patient killed himself. This happened 10 months after his first and only suicidal attempt. There were 16 cases in which attempted suicide had been a regular behaviour pattern in circumstances of stress. Of these, 11 had continued to react in this way. In 4 cases this behaviour pattern had ceased and there was reason to believe that this was due to hospitalization and treatment following on their last suicidal attempt.

I have given an illustration of various effects the suicidal attempt had in a special group of patients. Naturally, these effects will be differently represented in a series of patients admitted to a general hospital, or not admitted to hospital at all, and there may be still other effects not observed in this particular series.

The effects of the suicidal attempt are often short-lived, and sometimes it fails to alter anything. In such cases it is apt to be repeated. All this is highly relevant for the treatment of people who have made suicidal attempts. It is not enough to treat the underlying condition. We must also try to understand in every individual case the hidden message of the act of self-injury.

The emphasis on the death instinct as the main and only driving force has tended to obscure the complex psychodynamics of suicidal acts. The study of attempted suicide as a social behaviour pattern should go some way to remedying the stagnation in psychopathological research into suicidal acts. There is need for a re-examination of the various ways in which

aggressive tendencies manifest themselves in suicidal acts and interact with those which make for preservation and consolidation of human ties. It is not only the relative strength of those mental forces which decides the nature of suicidal acts. If suicidal attempt is a social act, its outcome will depend not only on the person inflicting injury on himself, but also on the way the environment intervenes. The variables are so numerous and so difficult to measure that prediction will always remain hazardous, all the more so as an element of unpredictability is one of the inherent qualities of the suicidal attempt, the one that I called its ordeal character.

There is another aspect of attempted suicide worthy of attention, i.e. its incidence in societies which differ from ours in their reactions to the individual's appeal for help. If our thesis of the appeal function of the suicidal attempt is correct, one would expect to have fewer suicidal attempts in a society unsympathetic or hostile to the individual. And this appears to be true. We know from Dr. Kral and other observers that in German concentration camps suicidal attempts were extremely rare, though suicide by giving up the struggle or by self-exposure to certain death was frequent. This is only one, and an extreme example, of the various ways in which the individual's relation to society affects the incidence of suicidal attempts as well as the forms of suicide.

The observations presented here should contribute to an understanding of attempted suicide and thus to its prevention. The study and treatment of those likely to resort to this behaviour pattern, or of those liable to repeat it, can make only a limited contribution to the prevention of suicide, because the majority of those who kill themselves have never manifestly attempted suicide before. However, a better understanding of attempted suicide is likely to benefit not only the knowledge and treatment of that costly and dangerous behaviour pattern, but also the study of suicide and the reduction of its incidence. Small as the number of suicides among those who have previously attempted suicide may be, it is still much larger than among the general population.

In this short presentation I have dealt mainly with the effects of attempted suicide on human relations which can be discerned without exploration of the more subtle and deeper psycho-

logical changes in those concerned, i.e. the person who has inflicted the self-injury on himself, and his group or groups. These are problems in need of careful study. At this stage it can only be said that often the experience of the suicidal attempt signifies to the patient death, survival and a new beginning. To those close to him it often stands for bereavement and therefore gives rise to mental reactions identical with mourning. It is apt to create the peculiar situation in which somebody who has died and yet survived is being mourned. All these complex reactions tend to make for revision and renewal of human relations. The outward effects of these reactions have been the subject of our investigations. But they spring from intrapsychic events. Here, as in other fields, changes in social behaviour cannot be understood without the knowledge of what is happening in the minds of individuals.

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## ANOXIA IN THE ACUTE RESPIRATORY INFECTIONS OF CHILDHOOD

The problem of anoxia was studied in 108 cases of acute respiratory infection in infants and children; oxygen saturation, response to oxygen therapy and clinical picture were compared. The most important point made is that the child's colour is not the best guide to anoxia; the main feature is restlessness with slow extension and flexion movements of the limbs, head rolling and arching of the back, accompanied by recurrent crying, particularly on handling. This behaviour must be differentiated by other physical signs from the picture of pain.

In some cases the standard oxygen tent, giving an oxygen concentration of 40-45%, was inadequate for relief of anoxia, and higher concentrations supplied by a small tent, face mask or special high tension oxygen box were needed.—B. Morrison, *Lancet*, 2: 737, 1955.

## THE DIAGNOSTIC APPROACH TO AURICULAR MYXOMAS\*

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THE PURPOSE OF THIS PAPER is to consider the most recent data on auricular myxomas and report briefly four new cases.

Many investigators have written comprehensive studies on cardiac tumours (Leriche and Bauer,<sup>11</sup> Yater,<sup>14</sup> and others). More recently, Mahaim<sup>12</sup> published a complete monograph in which he reviewed and analyzed a great number of cases, thus reviving interest in these tumours, usually oddities discovered by chance.

Apparently, primary tumours of the heart are relatively infrequent as compared with cardiac or pericardial metastases. Primary tumours are benign and of the myxoma type. Myxomata are mostly found in the left auricle but not infrequently in the right auricle; thus, two cases in our series were found in the latter.

The association of a congenital cardiac anomaly with auricular myxoma as in the first patient in our series, who also had an interauricular septal defect, seems to be entirely fortuitous. As to the age and sex incidence, results of statistical surveys vary greatly and are not conclusive.

Anatomically, the heart appears dilated and the auricle strikingly enlarged. The valves are not damaged, but it is common to find the atrio-ventricular orifice obstructed by the tumour, which partially fills the auricular cavity and tends to slip into the ventricle.

More often solitary and of variable size, myxomata are attached to the interauricular septum by a short pedicle derived from the endocardium and inserted around the foramen ovale. In addition, the tumour appears as a smooth, glittering, globular or polypoid mass, occasionally villous, reddish or yellowish-grey, semi-gelatinous or transparent, soft or elastic. Microscopically, the tumour mass is enclosed in a continuous endothelial layer. Its cellular content, though differentiated, is poorly specialized. Most of the few cells it contains appear ramified, spindle-shaped or round. Connective as well as elastic fibres are disseminated through a mucoid-reactive substratum, i.e. pink staining

with mucicarmine or violet with thionine. In addition to these, it is common to find many new-formed vessels along with hæmorrhagic plaques and hæmosiderin deposits. The predominance of either connective fibres or vascular tissue gives rise to distinctive types called fibromyxoma or angiomyxoma. It is of interest to note that the origin and nature of these tumours have for many years given rise to two schools of thought. Some investigators have supported the view that a myxoma is nothing less than a degenerated organized thrombus. Nevertheless, on the basis of embryology, it is now generally acknowledged that a myxoma is a true neoplasm. Accumulating evidence has proved that it is derived from the embryonic rests of the fossa ovalis. It is known that the fossa ovalis is the part where the last phase of the developmental cycle of the heart takes place. Thus, it is likely that the predilection of these tumours for the foramen ovale is not purely coincidental. Proponents of this modern concept find abundant support for their views.

It must be kept in mind, as Anderson<sup>2</sup> stated, that such tumours projecting into a cardiac cavity may be associated with thrombosis on their surface and embolizing potentialities. Furthermore, it is noteworthy, as Brown<sup>4</sup> remarks, that an organized thrombus never undergoes myxomatous degeneration in peripheral vessels where such thrombosis is commonest. He also calls attention to the fact that myxomata are much less frequent in the ventricles, where thrombosis is observed more often than in the auricles.

In any event, whatever the true nature of this neoplasm, it concerns the clinician primarily because of the mechanical accident it produces in the heart. Acting like a foreign body in the auricular cavity, this pedunculated, mobile tumour manifests itself clinically by cardiac embarrassment. This appears first by occlusion of the atrio-ventricular orifice, evidenced by a syndrome resembling mitral stenosis. It cannot be emphasized too strongly, however, that a previous history of rheumatic fever is usually lacking. If rheumatic fever has occurred previously as may happen occasionally, the diagnosis is of course impossible to make. Auricular filling is also partially responsible for congestive heart failure. Intermittent at first, the cardiac disturbances become progressive, then persistent and refractory to the usual therapeutic measures.

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The impossibility of satisfactorily establishing the cause of a severe organic cardiopathy, and the symptomatic variability observed with postural changes of the patient, appear as the most prominent features of the disease. The chief manifestations are dyspnoea, auscultatory changes, neurological disturbances and embolic phenomena.

Dyspnoea is an important source of trouble. Intermittent at first, it becomes progressive and severe. Not infrequently, attacks of paroxysmal dyspnoea associated with cyanosis occur in the supine position. The attacks are likely to depend on transitory occlusion of the pulmonary veins or mitral valve and consequently pulmonary stasis. If chronic and progressive, this mechanical embarrassment will produce pulmonary hypertension and right ventricular hypertrophy.

Auscultatory findings are of interest, for they suggest the diagnosis of mitral stenosis and may vary with postural changes. If the patient is in a standing or sitting position, the tumour would tend to narrow the mitral orifice and produce the auditory signs so characteristic of mitral stenosis, whereas with the patient in the supine position one would hear a systolic murmur. Nevertheless, it must be noted that the majority of cardiologists disagree on the constancy and exactness of such findings.

Finally, it is commonly observed that blood pressure and particularly pulse pressure are low in these patients, probably as a result of the same obstructive mechanism.

Sudden occlusion of the mitral valve may produce cerebral anoxia and consequently dizziness, unconsciousness, syncopal faints or epileptiform attacks and even motor disturbances.

Of greater severity are embolic complications. The sources of the emboli may be thrombi detached from the surface of the tumour or a tumoral fragment. In order of frequency, cerebral, pulmonary or peripheral embolism may be observed. It should be pointed out that cerebral embolism has no diagnostic value, for it is a common complication of severe affections of the left heart. It must be emphasized, moreover, that pulmonary embolism is mostly encountered with right auricular myxomata.

It may be possible occasionally to make the diagnosis of myxoma of the left auricle from peripheral embolism. Obviously, such an embolus would be myxomatous, and would have

to be removed and examined. The conditions of such a diagnosis are of course hazardous and unreliable. The occurrence of anginal pains is not unusual and has led to the suggestion that they may depend on coronary embolism, but anatomical studies do not support such an hypothesis. Occasionally, the clinical features may be suggestive of bacterial endocarditis. However, splenomegaly is absent and blood cultures are persistently negative in cases of myxoma.

The course of the disease is influenced primarily by the size of the tumour and its growth rate and to a lesser extent by the length of the pedicle. Sudden death may be caused by acute occlusion of the mitral orifice or pulmonary veins.

The electrocardiogram shows mainly P waves of increased height and duration and right ventricular strain as evidenced by RS-T segment depression and inversion of T waves. It should be noted, however, that the latter features may be due to digitalis. Occasionally, arrhythmias may occur, either auricular paroxysmal tachycardia, auricular flutter or fibrillation, premature contractions or bundle branch blocks. Thus, the electrocardiographic changes are of no value in making the diagnosis.

Roentgenographic examination of the heart is likewise of no significant value, showing an increase of cardiac shadow or a left auricular hypertrophy, right ventricular hypertrophy and not infrequently increase in pulmonary arteries. Of considerable interest, however, is angiocardiology, often confirming the presence of the tumour. In antero-posterior and lateral projections, filling defects are seen in an enlarged auricle. Recent studies<sup>7</sup> suggest that it would be possible to differentiate tumour from intra-auricular thrombosis by the greater size, relatively more rounded shape, well-marked contour and homogeneous aspect of the former. Such features at least are not seen in rheumatic mitral stenosis. Cardiac catheterization is of diagnostic aid in the case of right auricular myxoma, revealing high pressure in the auricle. In our third case, normal pressures were found in the right ventricle as well as pulmonary capillaries, but the pressure was significantly increased in the right auricle. From this finding, the diagnosis was suspected and subsequently confirmed by angiocardiology.

Finally, it is important to note that in a patient with isolated tricuspid stenosis, the possibility of a right auricular myxoma must first be examined, for this valve is rarely involved by the rheumatic process.

*Case 2:* N.Y., a 52-year-old man, had angina pectoris followed by myocardial infarction; no previous history of rheumatic fever. There were clinical signs of mitral regurgitation complicated by left heart failure. Radiologically, the heart shadow was increased, the left auricle slightly enlarged, and both ventricles were hypertrophied. E.C.G.: right ventricular hypertrophy. B.P.: 100/60.

TABLE I.

Case and sex	Age	Clinical aspect	B.P.	Venous pressure	Angiocardiography	Cardiac catheterization	Operative findings	Other findings
1. F.	43	Mitral stenosis? Interauricular septal defect. Chronic cor pulmonale.	110/60 to 120/70	Increased	Right-to-left shunt	Capillary pressure? Right ventricular, Right auricular, Pulm. arterial hypertension.	No mitral stenosis.	No rheumatic fever. Intra-parietal myxomas of the right auricle and pulmonary circulation.
2. M.	52	Mitral regurgitation. Left heart failure. Subacute bacterial endocarditis?	100/60	Normal				Angina pectoris—Myocardial infarct. Myxoma left auricle. Visceral myxomatous embolism. Sudden death. No rheumatic fever.
3. M.	39	Right heart failure. Tumour of the right auricle.	100/60 to 120/80	Increased	Filling defect of the right auricle.	Right auricular hypertension.	Removal of a right auricular myxoma.	No rheumatic fever.
4. M.	41	Mitral stenosis.	110/60	Normal		Compatible with mitral stenosis.	For commissurotomy. No mitral stenosis.	Myxoma of the left auricle. Rheumatic fever: very doubtful.

#### CASE REPORTS

*Case 1:* C.O., a 43-year-old woman, had a post-partum cardiac decompensation with a syndrome resembling mitral stenosis. No history of rheumatic fever. Positive Wassermann reaction. The course of the disease was marked by intermittent periods of improvement and relapse of right heart failure. Signs on auscultation were compatible with mitral stenosis.

Radiologically, increase of cardiac shadow; left auricle normal in size; right ventricle ++; right auricle +; pulmonary arteries dilated and pulsatile. Interauricular septal defect? E.C.G.: right ventricular hypertrophy ++; right auricular hypertrophy. Digitalis waves. B.P.: 120/70-110/60 mm. Hg. Venous pressure: 22.5 cm.-24.5-25. Cardiac catheterization: pulmonary arterial pressure 72; right ventricle pressure 50; right auricle 15; capillary pressures cannot be measured. Angiocardiography: right-to-left-shunt.

Surgical exploration: no mitral stenosis. Postoperative death by ventricular fibrillation.

*Autopsy findings:* left auricle and ventricle normal; right auricle and ventricle strikingly dilated and hypertrophied. Myxomatous tumours were found, totally included in the wall of the right auricle and pulmonary arteries. Myxomatous nodules were disseminated in the pulmonary vessels, without infarction. It should be noted that these findings are exceedingly rare. Inter-auricular septal defect was present. Real difficulty in diagnosis was encountered because of the exceptional site of the tumour, producing no true obstruction. This unusual process, because of its peculiar character, namely site and metastatic dissemination, was responsible clinically for chronic cor pulmonale.

Venous pressure: 5-8-4.5 cm. In the course of the disease, there was prolonged hyperthermia with cerebral embolism manifested by left hemiplegia and without splenomegaly. Subacute bacterial endocarditis? Sudden death.

*Autopsy:* dilated heart. The enlarged left auricle contained a pedunculated myxoma. There was considerable infarction of the posterior wall of the left ventricle. Coronary arteries: arteriosclerosis +++. Multiple visceral myxomatous embolism with infarcts to the kidneys, spleen and right temporal lobe (sylvian artery).

*Case 3:* B.V., a 39-year-old man. No rheumatic fever. Clinical signs of right heart failure. Radiologically, right ventricular hypertrophy +++; right auricular hypertrophy ++. E.C.G.: Right ventricular and auricular hypertrophy, complete right bundle branch block. Digitalis waves. BP: 120/80-100/60. Cardiac catheterization: right auricular as well as venous hypertension. Capillary pressure 1; pulm. arteries 11; right ventricle 8; right auricle 13; superior vena cava 18; venous pressure 26-33-23 cm. Angiocardiography: filling defect of the right auricle.

Subsequently, there were attacks of paroxysmal dyspnoea with cyanosis when the patient bent forward to take up something. Venous pressure before an attack 13.5-18.5-14.5; during an attack, it increased to 32-35.5-34.

Operative and post-mortem findings: right auricular myxoma. Postoperative death. This patient presented the characteristic features of a right auricular tumour as revealed by cardiac catheterization and angiocardiography.

Case 4: H.R., a 41-year-old man, hospitalized for mitral stenosis complicated by congestive heart failure. However, the rheumatic fever history was very doubtful. Signs on auscultation were compatible with mitral stenosis. Radiologically, both ventricles were hypertrophied; left auricle ++.

E.C.G.: Right ventricular hypertrophy, bilateral auricular hypertrophy, incomplete right bundle branch block. B.P.: 110/60. Normal venous pressure. Cardiac catheterization showed pressures compatible with mitral stenosis. Capillary pressure 35; pulm. arteries 54; right ventricle 27.5; right auricle 3.5. Thoracotomy for commissurotomy; no mitral stenosis, but left auricular myxoma found. Clinically, the most evident diagnosis was mitral stenosis.

#### SUMMARY

The diagnosis of auricular myxoma is facilitated by the following findings:

1. Mitral stenosis without rheumatic etiology.
2. Symptomatic variability with postural changes. Because of this well-recognized fact, it would be of interest to examine the patient in different positions, especially by auscultation and electrocardiography, and possibly so to observe suggestive differences.
3. Progressively severe heart failure not improved by the usual treatment.
4. Confirmatory findings at angiocardiology and cardiac catheterization. As these tumours are pedunculated and benign, their surgical removal is indicated and rational. Although patients operated on so far have not survived because of technical or organic difficulties, nevertheless it is hoped that with increasing progress in cardiac surgery, particularly with use of artificial heart

and lungs, myxomata will soon be radically cured by early operation.

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#### RÉSUMÉ

Les myxomes auriculaires sont des tumeurs bénignes, pédiculées, siégeant plus souvent dans l'oreillette gauche. Ils entraînent une obstruction auriculo-ventriculaire, se manifestant d'abord par le syndrome du rétrécissement mitral sans antécédents rhumatismaux puis par une insuffisance cardiaque progressivement sévère et pouvant s'accompagner d'accidents emboliques. L'évolution est irrémédiable et fatale, se terminant souvent par la mort subite.

Quoique peu fréquents, ils sont de plus en plus observés, grâce aux nouvelles méthodes qui en facilitent le diagnostic: angiocardigraphie et cathétérisme cardiaque. Nous en rapportons quatre cas: deux de l'oreillette gauche, deux de l'oreillette droite.

Le traitement chirurgical s'impose malgré les échecs actuels car les progrès techniques de la chirurgie cardiaque offrent les plus grandes possibilités pour leur cure radicale.

E.P.

#### MEDITERRANEAN ANÆMIA IN CHINESE CANADIANS\*

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IT IS THE PURPOSE of this communication to present a study of four Chinese families including three cases of Mediterranean anæmia and eleven persons with the trait.

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Criteria for the diagnosis of Mediterranean anæmia were divided into essential and supplementary. The essential criteria were marked anæmia, morphological abnormalities of red cells with target cells, microcytes, poikilocytes and hypochromia, demonstration of the trait in other members of the family, increased resistance of red cells to hæmolysis in hypotonic saline, and refractoriness of the anæmia to iron therapy. The supplementary criteria included values of fetal hæmoglobin above 2%, the absence of other abnormal hæmoglobins demonstrable by paper electrophoresis, reticulocytosis in excess of 1.5%, the presence of nucleated red cells in the circulating blood and, finally, clinical evidence of pallor, periodic attacks of fever, splenomegaly and hepatomegaly.

TABLE I.

CASES OF MEDITERRANEAN ANÆMIA

Date	Case A		Case B		Case C	
	March 25, 1950	December 8, 1954	October 23, 1953	December 15, 1954	November 2, 1954	December 16, 1954
Age (years)	1	5	1	2	6	6
Sex	F	F	M	M	F	F
Hb. g./100 ml.	5.4	10.2	4.7	6.1	4.5	9.5
RBC x 10 <sup>6</sup> /c.mm.	2.54	3.42	2.63	3.70	1.96	3.50
C.I.	0.7	1.0	0.6	0.6	0.7	0.9
PCV %	20	30	16	19	16	—
MCHC	25	32	25	31	27	—
Target cells	+1	+4	+4	+2	+3	+3
Microcytes	+3	+2	+4	+4	+2	+2
Hypochromia	present	present	present	present	present	present
Poikilocytes	+3	+1	+4	+4	+1	+1
Nucleated RBC/100 WBC	48	17	20	4	81	27
Reticulocytes %	7.6	1.0	—	4.2	5.4	3.0
Osmotic fragility % <sup>1</sup>	—	45-03	—	36-09	—	39-12
Fetal Hb. % <sup>2</sup>	—	14.3	—	44.9	—	8.8
Paper electrophoresis <sup>3</sup>	—	A F	—	A F	—	A F
WBC/c.mm.	18,050	19,000	14,600	8,700	13,490	14,650
Eos./c.mm.	1,805	1,900	298	348	—	876
Age at onset of symptoms	9 months		6 months		6 months	
Others in family with trait	2	2	2	2	4	4
Weight (pounds)	—	36	—	24	—	45
Height (inches)	—	41	—	—	—	43
Fever	present	present	present	present	present	present
Spleen (cm. below costal margin)	enlarged	Splenectomy 3 cm.	enlarged	3 cm.	Splenectomy 4 cm.	4 cm.
Liver (cm. below costal margin)	enlarged	present	enlarged	1 cm.	—	—
Café-au-lait spots	—	+3	—	0	—	—
Remarks	—	+3 macrocytes. 4 weeks after transfusion	—	4 weeks after transfusion	—	+3 macrocytes. 3 weeks after transfusion

(1) Normal 0.45%-0.24%.

(2) Normal 0 -1.7%.

(3) A is adult hæmoglobin. F is fetal hæmoglobin.

(—) means not done.

+1 means 1 to 2 cells per 100 red cells

+2 " 2 to 3 " " " " "

+3 " 3 to 4 " " " " "

+4 " over 4 " " " " "

The criteria for the Mediterranean trait were similarly divided. The essential criteria were increased resistance of red cells to hæmolysis in hypotonic saline, demonstration of the disease or the trait in other members of the family and the presence of microcytes and poikilocytes in the blood film. The supplementary criteria included the absence of symptoms, the finding of target cells, reticulocytosis above 1.5%, value of fetal hæmoglobin over 2%, the absence of other abnormal hæmoglobins demonstrable by paper electrophoresis, an increased red cell count (in males over 6 million per c.mm.; in females and children over 5.5 million per c.mm.) and splenomegaly.

#### MATERIALS AND METHODS

All hæmatological studies were made in the hæmatology laboratory of the Vancouver General

Hospital, according to standard methods.<sup>1</sup> Fetal hæmoglobin was measured by the alkali denaturation method,<sup>2</sup> and the method of Motulsky *et al.*<sup>3</sup> was used for the paper electrophoretic studies.

#### CASE REPORTS

Details of three children with Mediterranean anæmia and one child illustrating the Mediterranean trait are presented below.

*CASE A. Mediterranean anæmia. Both parents show the trait.* There are no other children in this family.

A five-year-old Chinese girl was first admitted to hospital at the age of nine months for investigation of an "anæmia". At 15 months of age, she was readmitted because of increasing pallor and hepato-splenomegaly. During the succeeding seven months she was admitted on five occasions for blood transfusions and at 22 months of age a splenectomy was performed (November 28, 1950). Since then, she has been hospitalized 17 times, and during this period has received numerous blood

TABLE II.

PARENTS AND SIBLINGS													
Family	Family A		Family B		Family C				Family D <sup>4</sup>				
Relationship...	Mother	Father	Mother	Father	Mother	Father	Brother	Brother	Case D	Mother	Sister	Sister	Sister
Age (years)...	29	46	29	31	30	33	5	4 mos.	8	36	7	10	6
Date.....	Aug. 25, 1951	Aug. 25, 1951	Dec. 15, 1954	Dec. 16, 1954	Dec. 16, 1954	Dec. 16, 1954	Dec. 16, 1954	Dec. 16, 1954	Dec. 8, 1954	Dec. 8, 1954	Dec. 8, 1954	Dec. 8, 1954	Dec. 8, 1954
Sex.....	F	M	F	M	F	M	M	M	M	F	F	F	F
Hb. g./100 ml.....	11.7	12.9	12.0	14.0	11.0	13.4	11.0	11.4	11.7	12.0	12.9	14.2	13.4
RBC x 10 <sup>6</sup> /c.mm.....	6.30	5.91	5.25	5.65	5.15	6.60	5.30	4.94	5.00	5.60	5.25	5.00	5.05
C.I.....	0.6	0.8	0.8	0.8	0.7	0.8	0.7	0.8	0.7	0.7	0.8	0.9	0.9
PCV %.....	—	—	41	47	39	47	36	—	32	40	39	45	42
MCHC.....	—	—	34	33	28	28	30	—	36	30	33	31	31
Target cells.....	+1	+1	+1	0	+3	+4	+4	+4	+4	+4	+2	0	0
Microcytes.....	+2	+1	+2	+1	+3	+2	+2	+3	+4	+1	+1	0	0
Hypochromia.....	present	present	absent	absent	present	present	present	present	present	present	present	present	absent
Poikilocytes.....	+1	+1	+1	+1	+2	+1	+1	+2	+3	+1	+1	0	0
Nucleated RBC/100 WBC.....	0	0	0	0	0	0	0	0	0	0	0	0	0
Reticulocytes %.....	—	—	2.2	0.6	2.8	2.6	2.2	3.0	6.0	3.8	2.6	0.8	1.8
Osmotic fragility <sup>1</sup> .....	—	—	.39-.12	.42-.09	.39-.19	.36-.12	.36-.12	.39-.15	.34-.03	.36-.06	.36-.12	.42-.24	.42-.24
Fetal Hb. % <sup>2</sup> .....	—	—	2.9	3.0	2.0	1.7	2.9	80.1	11.3	2.7	1.5	1.1	0.9
Paper electrophoresis <sup>3</sup> .....	—	—	A	A	A	A	A	AF	AF	A	A	A	A
WBC/c.mm.....	6,300	6,050	6,200	8,100	6,300	5,500	11,400	12,300	7,600	8,600	9,100	9,500	10,400
Eos./c.mm.....	63	0	186	162	315	110	456	369	132	86	546	285	312
Others in family with disease or trait.....	2	2	2	2	4	4	4	4	2	2	2	3	3
Weight (pounds)....	—	—	110	120	—	—	—	17	59	—	57	90	52
Height (inches)....	—	—	60	64½	—	—	40½	—	49	—	48½	—	45½
Fever.....	0	0	0	0	0	0	0	0	irregular	0	0	0	0
Spleen (cm. below costal margin)	—	—	1 cm.	0	0	0	0	—	4 cm.	0	0	0	0
Liver (cm. below costal margin)	—	—	0	0	0	0	0	—	0	0	0	0	0
Café-au-lait spots.....	—	—	0	0	—	—	—	—	present	0	0	0	present
Remarks.....												normal	normal

(1) Normal range 0.45% to 0.24%.

(2) Normal 0% to 1.7%.

(3) A is adult haemoglobin and F is fetal haemoglobin.

(4) Father is dead.

(—) Not done.

(0) Absent.

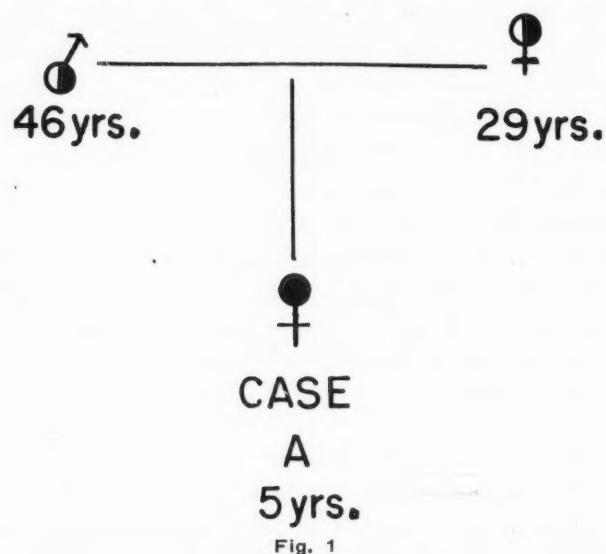
transfusions. On seven occasions her temperature has risen above 100° F. and on one occasion she had an episode of acute abdominal pain. Physical examination on December 8, 1954, showed an active, well-developed, but pale child. Height was 41 inches and weight was 36 pounds. The relevant findings on examination were a splenectomy scar in the left upper quadrant, a liver enlarged to 3 cm. below the costal margin, normal heart size with no murmurs, café-au-lait spots bilaterally in dermatome T 10 and the absence of leg ulcers.

**Laboratory investigation:** For complete haematological data on the patient before and after splenectomy, see Table I (Case A). On December 8, 1954, the haemoglobin value was 10.2 gm. per 100 ml. and the red cell count was 3.42 million per c.mm.; the blood film showed target cells, microcytes, hypochromia, poikilocytes, macrocytes, basophilic stippling, Howell-Jolly bodies and polychromasia. Seventeen nucleated red cells were seen per 100 white cells. The red cells showed an increased resistance to haemolysis in hypotonic saline. Fetal haemoglobin was 14.3%. Total serum bilirubin was 2.3 mg. per 100 ml. (March 25, 1950). Bone marrow aspiration on February 6, 1950, showed hyperplasia of the erythroid series. The pathological report on the spleen and liver (splenectomy and liver biopsy done November 28, 1950) revealed extramedullary haematopoiesis in both organs, and hemosiderin deposits in the reticulo-endothelial cells lining the sinusoids of the spleen and in the parenchymal liver cells. The spleen weighed 107 g. and showed a diffuse increase in fibrous tissue. There was no fibrosis in the liver. Skull radiographs showed an increase in the diploic space of the frontal bone and a "hair-on-end" appearance (February 22, 1951). **Treatment:** This child's anaemia was refractory to a course

of oral iron, and anaemia was not benefited by splenectomy. She has received a total of nine litres of whole blood.

#### Family A:

As this child was in a foster home, only partial studies on the parents were available. Both were Chinese and had come to Canada from Canton, China. For haematological data on the parents, see Table II (Family A).



**CASE B. Mediterranean anæmia. Both parents show the trait.** There are no other children in the family.

This two-year-old Chinese boy was first admitted to hospital at the age of six months for investigation of "anæmia". Physical examination at that time revealed hepato-splenomegaly. At seven months of age he had "severe diarrhoea" with a temp. of 105° F. Since then, he has been admitted twice more for blood transfusions. Physical examination on December 15, 1954, showed a well-nourished but pale child. The head was large, the malar bones were unusually prominent, and the eyelids were puffy. Height was not recorded; weight was 24 pounds. The spleen was enlarged to 3 cm. and the liver to 1 cm. below the costal margin. The heart was of normal size with no murmurs. No leg ulcers were present.

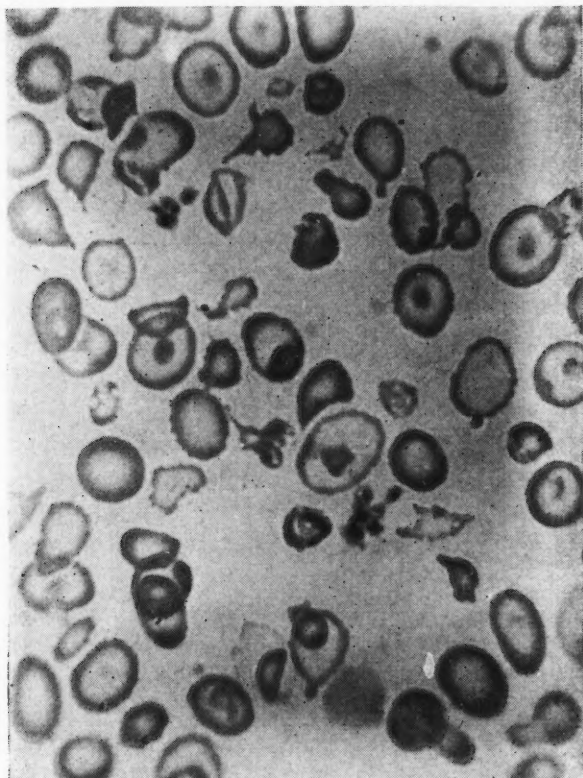


Fig. 2.—Blood film (Case B) showing target cells, poikilocytes and hypochromia.

**Laboratory investigation:** For complete hæmatological data on the patient, see Table I (Case B). On December 15, 1954, the hæmoglobin value was 6.1 g. per 100 ml. and the red cell count 3.70 million per c.mm. The blood film showed target cells, microcytes, hypochromia, poikilocytes, macrocytes, basophilic stippling, Howell-Jolly bodies and polychromasia. Four nucleated red cells were seen per 100 white cells. The reticulocyte count was 4.2%. The red cells showed an increased resistance to hæmolysis in hypotonic saline. Fetal hæmoglobin was 44.9%. Radiographs of the skull and long bones at six months of age were normal (June 22, 1953). No further films have been taken.

**Treatment:** This child's anæmia was refractory to a course of oral iron therapy. He has received a total of 1½ litres of whole blood.

#### Family B:

His 31-year-old father was in good health and his 29-year-old mother was noted to have been "anæmic" in her childhood. The father and the maternal grandparents came to Canada from the Canton region of China; the mother was born in Vancouver. The patient was an

only child. The relevant clinical and hæmatological findings of the parents are summarized in Table II (Family B).

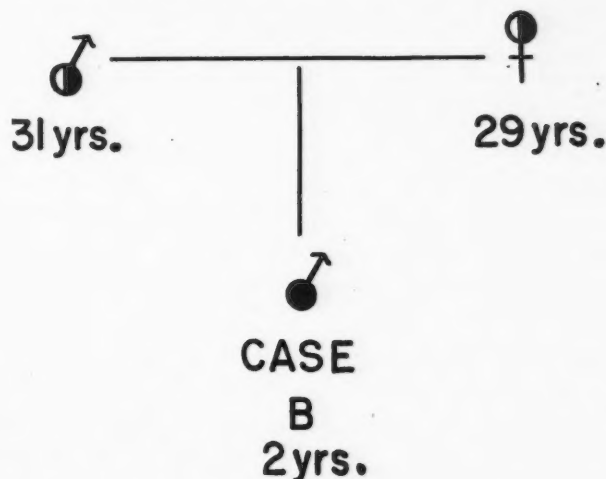


Fig. 3

**CASE C. Mediterranean anæmia. Both parents and two siblings show the trait.**

This six-year-old Chinese girl was first admitted to hospital at the age of six months for investigation of "anæmia". At that time she was noted to have anorexia, fever and "pallor". A splenectomy was performed at the age of two years. Subsequently, she has required hospitalization at approximately three-month intervals for blood transfusions. Before each admission she complained of anorexia and easy fatiguability. Her temperature has risen above 100° F. on many occasions. Physical examination on December 16, 1954, showed a well-developed, well-nourished girl. Height was 43 inches and weight 45 pounds. Temperature was 101° F. Other relevant findings were a splenectomy scar in the left upper quadrant, a firm liver enlarged to 4 cm. below the costal margin, a heart enlarged 8 cm. from the midsternal line in the fifth interspace, and absence of leg ulcers.

**Laboratory investigation:** For complete hæmatological data on the patient, see Table I (Case C). On December 16, 1954, the hæmoglobin value was 9.5 g. per 100 ml. and the red cell count was 3.50 million per c.mm. The blood film showed target cells, microcytes, hypochromia, poikilocytes, macrocytes, basophilic stippling and Howell-Jolly bodies. Twenty-seven nucleated red cells were seen per 100 white cells. The red cells showed an increased resistance to hæmolysis in hypotonic saline. Fetal hæmoglobin was 8.8%. Bone marrow examination showed

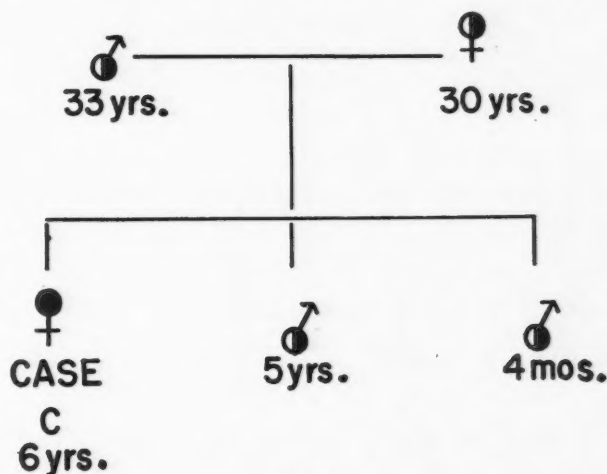


Fig. 4

hyperplasia of the erythroid series (November 2, 1954). Total serum bilirubin was 3.8 mg. per 100 ml. (July 9, 1954). Skull radiographs showed widening of the diploe of the calvarium, particularly over the frontal region with separation of the inner and outer tables (November 13, 1953).

**Treatment:** The anæmia has been refractory to a course of oral iron therapy and did not improve following a splenectomy. She has received a total of 10 litres of whole blood.

#### Family C:

Both parents are well. They had come to Canada from Canton, China. The patient is the eldest of three siblings, the younger children are in good health. The relevant clinical and hæmatological findings in this family are summarized in Table II (Family C).

**CASE D. Mediterranean trait.** The mother and one sibling also show the trait. Two children are normal. The father is dead.

This eight-year-old Chinese boy was first admitted to hospital at the age of six years, because of increasing pallor and fatiguability. Examination at that time revealed fever and splenomegaly. Since then, the child has been attending school but his mother has noted that he tires easily and has a poor appetite. Physical examination on December 8, 1954, showed a fairly well-developed boy. Height was 49 inches and weight 59 pounds. The relevant findings on examination were a spleen enlarged to 4 cm. below the costal margin, a normal-sized heart with no murmurs, café-au-lait spots bilaterally in dermatomes T 6 and T 11 and the absence of leg ulcers.

**Laboratory investigation:** For complete hæmatological data on the patient see Table II (Case D). On December 8, 1954, the hæmoglobin value was 11.7 g. per 100 ml. and the red cell count 5.00 million per c.mm. The blood film showed target cells, poikilocytes, microcytes and hypochromia. There were no nucleated red cells in the circulating blood. The reticulocyte count was 6%. The red cells showed an increased resistance to hæmolysis in hypotonic saline. Fetal hæmoglobin was 11.3%. Radiographs of the skull and long bones were normal at the age of six years (November 29, 1952).

**Treatment:** This child's anæmia was refractory to a course of oral iron therapy. He has received no blood transfusions.

#### Family D:

His father died at the age of 44 years from "heart trouble" and "diabetes". No autopsy was performed.

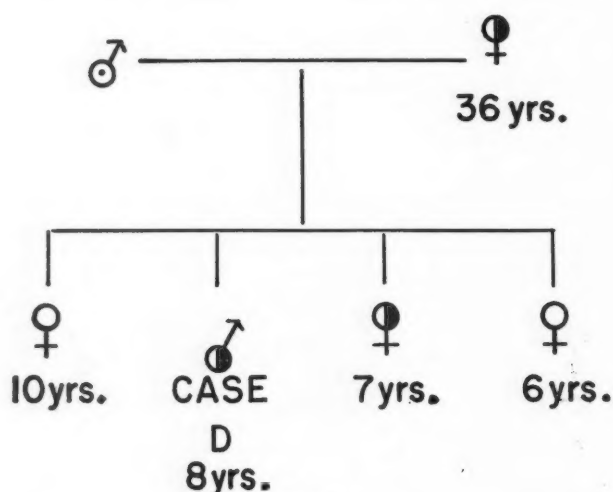


Fig. 5

His 36-year-old mother has been "anæmic" for many years. Both parents came to Canada from Canton, China. The patient is the second of four siblings. The other three children are in good health; one shows the trait and two do not. The relevant clinical and hæmatological findings in this family are summarized in Table II (Family D).

#### ANALYSIS OF RESULTS

**Mediterranean anæmia:** The clinical and hæmatological manifestations in three children with Mediterranean anæmia are summarized in Table I. The most striking feature was the presence of a severe anæmia requiring repeated blood transfusions. Target cells, microcytes and poikilocytes were present but hypochromia was less prominent. The red cells showed an increased resistance to hæmolysis in hypotonic saline. In all cases the condition was refractory to adequate courses of oral iron therapy. The values of fetal hæmoglobin ranged between 8.8% and 44.9%. The severity of the disease did not appear to be related to the amount of fetal hæmoglobin found. Case C had been transfused one week before the determination of the fetal hæmoglobin; therefore the value of 8.8% is perhaps lower than if this estimation had been done at a later date when the transfused cells had disappeared. Paper electrophoresis showed the presence of hæmoglobins A and F only. Sickling was tested for in two cases (A and C) and was absent in both. Nucleated red cells were present and varied in number from four to 81 per 100 white cells. In all three cases, symptoms were present before the age of one year. In contrast to the standard description of patients as small,<sup>4</sup> these children showed normal growth and development. Café-au-lait spots were noted in one child (*vide infra*). Leg ulcers<sup>5</sup> were not seen in any of the cases. X-ray abnormalities of bone were present in two out of three cases, but recent radiographs had not been taken in the third case. The total serum bilirubin value was increased in two. The eosinophil count was elevated (over 300 per c.mm.) in all cases. No cause for the eosinophilia was found, although no specific studies to determine the etiology were made. Splenectomy was performed in two children, but the course of the disease was not altered as far as could be estimated by transfusion requirements. In all cases, both parents had the trait.

**Mediterranean Trait:** The clinical and hæmatological findings in the individuals with the Mediterranean trait are summarized in Table II. The most consistent finding in those in whom

the test was performed was the presence of red cells showing increased resistance to hæmolysis in hypotonic saline. In all instances, at least one other member of the family had the trait. Microcytes and poikilocytes were found in all and target cells in all but one. The reticulocyte count was elevated in eight out of nine examined. Values for fetal hæmoglobin were increased in six out of nine and ranged between 2.7% and 80.1%; the latter value was found in a four-month-old infant. The upper limit of normal for this age group is 19%.<sup>2</sup> The red cell count was elevated in three out of eleven. Splenomegaly was noted in two of the eight examined. All but one were symptom-free; two gave a history of "anæmia" in childhood. Café-au-lait spots were observed in one case; the significance of these is not clear, nor is their incidence in the normal Chinese population known. There was a mild eosinophilia in four people, but no specific search was made for other causes.

Case D and the four-month-old brother of Case C are included in the Mediterranean trait group but presented certain features of Mediterranean anæmia. Both children showed marked red cell abnormalities, greatly elevated fetal hæmoglobin values, and the presence of hæmoglobin F on paper electrophoresis. In addition, Case D had an enlarged spleen and irregular bouts of fever. However, these children were excluded from the Mediterranean anæmia group because they failed to show severe anæmia, and neither has required blood transfusions. One may speculate that the four-month infant may ultimately develop the disease.

Hæmoglobin E has been described in some cases of "Mediterranean anæmia".<sup>6</sup> None of the individuals presented in this communication showed hæmoglobin E.

#### COMMENT

Various names have been used for this disease including Cooley's anæmia, thalassæmia, erythroblastic anæmia, Mediterranean anæmia, disease or fever, target cell anæmia, familial microcytic anæmia, hereditary or familial poikilocytosis and hereditary leptocytosis.<sup>7</sup> The prefix "Mediterranean" was chosen for this paper because it is a commonly employed term and since it emphasizes the anomaly of its use to describe a disease occurring in non-Mediterranean peoples.

Cooley first described this entity in 1925.<sup>8</sup> It was given the name Mediterranean anæmia or thalassæmia by Whipple and Bradford,<sup>9</sup> who thought that it was limited to Italians, Greeks and Syrians, i.e. to the peoples originating about the Mediterranean Sea. Wintrobe recognized a major and a minor form.<sup>10</sup> Dameshek described similar cases under the name "target cell anæmia".<sup>11</sup> It is now accepted that this disease does not occur exclusively in Mediterranean races as was previously thought.<sup>4</sup> It has been reported in Armenians, Egyptians, Germans, Spaniards, Mexicans, Negroes, a Filipino-French family, a Scottish-Spanish family, Bucharan-Jews,<sup>4</sup> and Turks.<sup>12</sup> Sporadic cases have been described in Chinese<sup>14-22</sup> and East Indian children.<sup>4</sup> Recently, we have studied a Sikh family with the Mediterranean trait who originally came from Punjab, India.<sup>23</sup>

During the years 1949 to 1954, five cases of Mediterranean anæmia have been diagnosed in the hæmatology laboratory of this hospital; of these, three have occurred in Chinese and two in Greeks. Although no attempt has been made to study the incidence of this disease in the Greek and Chinese population, it should be noted that there are approximately 2,000 Greeks and 10,000 Chinese in Vancouver.

Minnich *et al.* have stated that Mediterranean anæmia is the most common hæmolytic anæmia seen in Thailand.<sup>13</sup> Migrations of the Thai race have occurred from Southern China into Thailand.<sup>24</sup> In view of this fact, it may be of significance that all the families studied by us came originally from the Canton region of South China.

#### SUMMARY

Three cases of Mediterranean anæmia and 11 instances of the Mediterranean trait occurring in four Canadian-Chinese families have been presented.

The authors wish to thank Dr. K. A. Evelyn, Director of the British Columbia Medical Research Institute, for his helpful criticism, and Dr. J. Eden, Clinical Chemist, Vancouver General Hospital, for his advice regarding the chemical and electrophoretic examinations.

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## RÉSUMÉ

Après avoir rappelé les critères sur lesquels sont basés les diagnostics de l'anémie méditerranéenne et de la

forme latente de celle-ci, les auteurs rapportent une série de cas chez des néo-Canadiens d'origine chinoise, qu'ils ont été à même d'observer.

Le fait saillant de ces observations est le degré d'anémie de ces malades, exigeant des transfusions répétées. Les globules rouges montrèrent une résistance accrue à l'hémolyse par les solutions salées hypotoniques. Le taux d'hémoglobine fétal ne sembla pas être en rapport avec la gravité de l'état morbide. Les symptômes apparurent tous avant l'âge d'un an chez les trois enfants ayant le syndrome complet. Le développement de ces enfants sembla normal.

Chez les malades n'ayant que la forme latente, la présence de globules rouges montrant une résistance augmentée à l'hémolyse en solution salée hypotonique semble être le caractère le plus constant. La majorité de ces patients n'accusait aucun symptôme.

Les auteurs choisirent l'épithète "méditerranéenne" parmi le grand nombre d'autres vocables par lesquels cette maladie est connue, non seulement parce que cette appellation est couramment employée mais aussi pour illustrer la faute commise lorsqu'on l'applique à des gens d'origine non méditerranéenne. Si l'on se rappelle que l'anémie méditerranéenne est l'anémie hémolytique la plus répandue au Thailand et que, d'autre part, la race thaïe tirerait ses origines du sud de la Chine, la présence de cette maladie chez des Chinois originaires de Canton revêt une signification particulière. M.R.D.

THE DIEPKLOOF NUTRITION AND  
HEALTH STUDY ON BANTU BOYS,  
SOUTH AFRICA  
CLINICAL FINDINGS IN RELATION TO  
SERUM VITAMIN A AND TOTAL  
CAROTENOIDS, TOTAL BLOOD VITAMIN  
C, AND A GROUP OF LIVER  
FUNCTION TESTS

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DURING the last 15 years there has been mounting interest in the state of health and nutrition of the Bantu (Negro) population of the Union of South Africa. Amongst schoolchildren, two extensive studies have been published. The first was a clinical examination of 3,510 Bantu children at Alexandra Township, near Johannesburg,<sup>1</sup> and the second was a combined clinical and somatometric investigation of 6,443 Bantu schoolchildren in both urban and rural areas.<sup>2</sup>

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Both these studies showed the presence of varying degrees of malnutrition. As these surveys were extensive, it was not possible to delve deeply into questions of etiology and details of blood chemistry.

In 1951, however, a fortunate concatenation of circumstances made possible a detailed study of a group of Bantu boys by a team of workers in various special fields. It was felt that a useful purpose would be served by intensively studying a small group of these boys by a detailed clinical assessment, chest radiography, and various biochemical studies, including blood vitamin levels, liver function tests and tests of physical fitness. The teeth and gingivæ of the boys received thorough study by a research dentist, and final assessment of the eyes of the children was made by an ophthalmic surgeon. The skin was studied by a dermatologist and, where necessary, bacteriological and serological studies were carried out. Stools and urine were examined microscopically and tuberculin tests were made. The routine hæmatological determinations were hæmoglobin estimations and packed cell volumes. Records were kept of all illnesses.<sup>3, 4, 5</sup>

The study was carried out at the Diepkloof Reformatory, near Johannesburg. This institution is run by the Union Department of Education, Arts and Science, under sympathetic and

enlightened management. Bantu boys convicted of various crimes are sent there for a number of years.

For the purposes of the investigation the principal of the institution was asked to select two groups of 30 boys each out of 700 available. The groups were to be similar, as far as possible, with respect to age, height and weight. They were accommodated in two hostels, A and B.

Group A were placed on a good standard diet, while Group B were placed on a diet resembling that commonly consumed in rural and urban areas by Bantu in South Africa. The boys had been consuming a satisfactory "institution" diet for a mean period of 7.6 months before being placed on the experimental diets on February 1, 1951. Clinical examinations were completed by February 14 and most of the other determinations by the end of April 1951. The boys were taken off the diets on April 30, 1952. Before the end of the experiment they were again examined clinically and the various biochemical and other tests were repeated.

#### THE DIETS

As shown in Table I, Diet A is adequate by most standards. Diet B is low in animal protein, fat, calcium, vitamin A (or carotene), ascorbic acid and B vitamins. It is not low in calories, as boys were given additional corn-meal (maize) porridge whenever they asked for more food. The assumption was made that extra vitamin D was not required in view of the many days of sunshine per annum in the Transvaal.

A dietitian was present at all meals and she supervised preparation of the food. Notes were kept of children who ate more or less than the amount given. In general, appetites were good. The boys settled down well to the diets. Diet B was popular on account of added biscuits, sweets and mineral waters ("pop"), although, especially in the beginning of the change in diets, these boys missed the daily meat ration.

Group A received vegetables daily. Carrots and potatoes were served daily, while onions, leeks, spinach, cabbage, pumpkin and tomatoes were seasonal. One pound of fruit, such as yellow peaches, guavas, grapes and oranges, was provided weekly for each boy. Group B were given the same vegetables in smaller quantities, three times a week. They received no fruit. Further details on the diets were given in a previous paper.<sup>3</sup>

TABLE I.

DIETS USED IN THE DIEPKLOOF PROJECT  
(CALCULATED PROXIMATE PRINCIPLES MAINLY ACCORDING  
TO FOX AND GOLBERG<sup>6</sup>)  
DAILY INTAKE PER HEAD, EDIBLE PORTION

Composition	Standard diet A	Rural and urban diet B
Protein:		
Animal.....	46.4 g.	4.1 g.
Vegetable.....	70.0 g.	62.7 g.
Total.....	116.4 g.	66.8 g.
Fat.....	86.1 g.	23.5 g.
Carbohydrate.....	560.0 g.	621.0 g.
Calories.....	3480.0	2963.0
Calcium.....	0.794 g.	0.272 g.
Phosphorus.....	2.073 g.	1.075 g.
Iron.....	33.5 mg.	22.5 mg.
Vitamin A, carotene.....	3037.0 I.U.	609.0 I.U.
Ascorbic acid.....	81.0 mg.	14.0 mg.
Thiamine.....	1.98 mg.	1.25 mg.
Riboflavin.....	1.91 mg.	0.71 mg.
Nicotinic acid.....	22.10 mg.	7.2 mg.

#### THE CLINICAL EXAMINATION

A complete routine physical examination was carried out in most instances by H. leR., at times assisted by another medical officer in the same room. Doubtful points were discussed and agreed upon before recording. Each boy was weighed and measured for height on an accurate standard. Urine was tested for albumin by the salicysulphonic test, and for sugar by Benedict's qualitative test, and centrifuged and observed microscopically. When in doubt, specimens were examined microscopically and bacteriologically in the Routine Division of the South African Institute for Medical Research, Johannesburg. Specimen stools were also taken for examination at the Institute, while venous blood was taken for various tests as outlined above.

The heights and weights of the boys at the beginning and end of the experiment are shown in Table II. The mean age of those in Group A was  $14.78 \pm 0.27$  years, and of Group B  $14.91 \pm 0.38$  years at the beginning of the experiment.

TABLE II.

	Group A standard diet Mean and Cases standard error			Group B Rural and urban diet Mean and Cases standard error		
1951 height	30	60.0	$\pm 0.50$ in.	30	59.26	$\pm 0.62$ in.
1951 weight	30	89.67	$\pm 2.36$ lb.	30	89.50	$\pm 2.26$ lb.
1952 height	28	61.2	$\pm 0.55$ in.	26	60.8	$\pm 0.62$ in.
1952 weight	28	101.6	$\pm 2.70$ lb.	26	98.9	$\pm 2.76$ lb.

The differences between height and weight in the two groups are small and not statistically significant either at the beginning or the end

TABLE III.

DIEPKLOOF BANTU BOYS: CERTAIN SKIN SIGNS AT THE END OF THE PROJECT COMPARISON OF FINDINGS OF TWO OBSERVERS				
	(leR.)		(L.)	
	Group A standard diet	Group B urban and rural diet	Group A	Group B
<i>Pilosebaceous follicles:</i>				
No abnormality detected . . . .	18	12	14	8
No abnormality of follicles, but acne . . . .	0	2	1	0
Acne . . . . .	2	3	7	1
Acne and enlarged follicles . . . .	0	2	0	3
Enlarged follicles . . . . .	0	4	5	11
Dyssebacia . . . . .	3	2	0	0
Phrynoderma . . . . .	0	0	0	2
Dyssebacia and acne . . . . .	4	1	0	0
Phrynoderma and acne . . . . .	0	0	0	1
No abnormality but dyssebacia . . . .	1	0	0	0
Dyssebacia and some enlargement . . . .	0	0	1	0
	28	26	28	26
<i>Texture of skin</i>				
Smooth . . . . .	22	20	14	11
Smooth and dry . . . . .	0	0	2	1
Dry . . . . .	3	1	10	9
Dry and hyperkeratotic . . . . .	1	2	0	1
Dry and mosaic . . . . .	0	0	0	2
Mosaic . . . . .	1	0	0	0
Mosaic and smooth . . . . .	1	0	1	0
Mosaic and hyperkeratotic . . . . .	0	0	0	1
Hyperkeratotic . . . . .	0	3	1	0
Hyperkeratotic and smooth . . . . .	0	0	0	1
<i>Colour</i>				
Lustrous . . . . .	25	20	15	11
Lustrous with patchy hyperpigmentation . . . .	0	2	0	0
Patchy hyperpigmentation . . . . .	1	1	0	0
Patchy hyperpigmentation and dull . . . .	0	1	0	0
Dull . . . . .	1	2	12	15
Hypopigmentation . . . . .	1	0	0	0
Hypopigmentation and dull . . . . .	0	0	1	0
	28	26	28	26

of the experiment, although the difference in weight is greater at the end of the project than in the beginning.

#### BUILD, POSTURE, SUBCUTANEOUS TISSUE AND MUSCULATURE

In general the build and posture of both groups were satisfactory. No attempt was made

at detailed somatotyping.<sup>7, 8</sup> The impressions were clinical. There were no cases of muscular weakness or skeletal deformity. As a group, their build was slender. No differences were found between the two groups in regard to these characteristics either at the beginning or the end of the project.

#### SKIN AND MOUTH

At the end of the project the skin was examined by one of the authors (H. leR.) and independently by a dermatologist with extensive experience in clinical assessment of malnutrition (Dr. L. J. A. Loewenthal). The findings are shown in Table III. At the time of examination it was not known to which experimental group each boy belonged. An experienced dental research officer examined the mouths of the boys at the commencement and termination of the experiment.<sup>5</sup>

Various authors<sup>9-13</sup> have ascribed such conditions as cheilosis, stomatitis, glossitis and gingivitis to specific deficiencies in niacin, riboflavin or pyridoxine. In our view these mouth and tongue signs are probably non-specific in nature, and similar signs may follow on a variety of deficiencies or imbalances, mainly nutritional but possibly hormonal. The role of infection should not be forgotten.

The classification of the skin signs of malnutrition is difficult, because of lack of precise definition, the range of physiological normal being often a matter of personal opinion. At the beginning of the study there were no differences in regard to the number of boys with "normal" skin.<sup>3</sup> As shown in Table III, at the end of the study, both observers found "normal" skin in fewer boys in Group B, on the less adequate diet. As could be expected, there were differences between the two observers regarding specific signs in the two groups. Applying the chi-square test, the differences between "normal" and "abnormal" skin were not statistically significant between the two groups whether examined by L. or leR. Nevertheless, statistical significance and biological significance are not the same thing. As Sir Ernest Kennaway<sup>15</sup> has recently pointed out, important small biological differences may exist without their being statistically significant.

In the present study, L. made a broad classification into "good", "doubtful" and "bad", based mainly on skin signs, of the nutritional cate-

gory into which the boys fell. In his "good" group he placed 17 boys, 12 from Group A on the good standard diet and 5 from Group B on the less adequate diet. On the other hand, in the "bad" nutritional group were placed 13 from Group B and only 5 from Group A. Nineteen boys were placed in the "doubtful" category, 11 from Group A and 8 from Group B.

oil and the international standard vitamin A acetate in cottonseed oil, as standards. Whole blood vitamin C was estimated by the method of Roe and Kuether.<sup>19</sup> A micro-adaptor and filter were used in the Evelyn colorimeter.

As expected, there was a fall in all vitamin levels in the B group towards the end of the project. The next step was to see whether there

TABLE IV

DIEPKLOOF BANTU BOYS: VITAMIN A, TOTAL CAROTENOIDS AND ASCORBIC ACID AT END OF PROJECT (FEBRUARY TO APRIL 1952)						
	Cases	Group A: standard diet Mean and S.E.	Range	Cases	Group B: Bantu rural and urban diet Mean and S.E.	Range
Vitamin A (I.U. per 100 ml. serum) . . . .	27	73.22 $\pm$ 3.4	51 to 86	26	62.42 $\pm$ 3.3	38 to 80
Total carotenoids (mg. per 100 ml. serum) . . . .	27	72.30 $\pm$ 4.6	48 to 126	26	57.46 $\pm$ 3.7	38 to 90
Ascorbic acid (mg per 100 ml. blood) . . . . .	27	0.51 $\pm$ 0.04	0.20 to 1.0	26	0.24 $\pm$ 0.02	0.14 to 0.4

Applying the chi-square test to boys in Loe-  
wenthal's "good" and "bad" groups we found  
P less than 0.05. We may conclude that clinical  
examination did select boys at the extremes of  
the scale. No doubt differences would have been  
more marked had the experiment been continued  
for a longer period.

#### LIPS

At the onset of the experiment it was found  
that the boys in Group B had a higher prevalence  
of scarred and fissured lips than those in Group  
A. This was statistically significant by the chi-  
square test (P between 0.05 and 0.02). As a result  
of this fortuitous circumstance, we could not  
attempt to measure the effect of the less adequate  
diet on the lips *per se*. There was, however, no  
obvious deterioration in the state of the lips by  
the end of the experiment. At the re-examina-  
tion, nothing of interest was noted in the tongues  
of the boys.

#### SKIN FINDINGS IN RELATION TO SERUM CAROTENOIDS AND VITAMIN A AND BLOOD VITAMIN C

A more detailed description of these vitamin  
levels has been given by Ockerse *et al.*<sup>5</sup> The  
vitamin A and carotenoids were estimated by a  
modification of the methods of Clausen and  
McCoord,<sup>16</sup> Kimble<sup>17</sup> and Yudkin,<sup>18</sup> using the  
international standard of beta-carotene in arachis

were lower values in those boys who had been  
classified as having signs of skin disease in Group  
B at the end of the survey. These values are  
shown in Table V.

TABLE V.

DIEPKLOOF BANTU BOYS:  
VITAMIN A AND TOTAL CAROTENOIDS IN SERUM AND  
ASCORBIC ACID IN WHOLE BLOOD, IN GROUP B, ON THE  
LESS ADEQUATE DIET  
COMPARISON OF BOYS  
WITH SKIN WITH "NO ABNORMALITY" AND  
THOSE WITH "SIGNS OF NUTRITIONAL DISEASE"

State of pilosebaceous follicles	Mean vitamin values		
	Total blood ascorbic acid, mg. per 100 ml.	Serum vitamin A (I.U. per 100 ml.)	Serum carotenoids mg. per 100 ml.
<i>L. classification:</i>			
No abnormality . . . . .	0.24	54	63
Signs of nutritional disease . . . . .	0.25	57	63
<i>leR. classification:</i>			
No abnormality . . . . .	0.26	58	60
Signs of nutritional disease . . . . .	0.23	57	65

These differences are minimal and we may  
conclude that, under the conditions of the present  
experiment, no relationship could be found  
between serum vitamin A and carotene levels,  
total blood ascorbic acid and the state of the  
pilosebaceous follicles in the boys on the less  
adequate diet. Probably at lower levels of intake  
such a relationship might have been found, espe-  
cially if the project had continued for a longer  
time.

#### GINGIVÆ AND SERUM VITAMIN A AND CAROTENOIDS AND TOTAL BLOOD VITAMIN C

The gingivitis found was mild at both examinations.<sup>5</sup> At the end of the project, no statistically significant relationship could be found between the occurrence of gingivitis and total blood vitamin C levels. Similarly, no relationship could be found in regard to serum vitamin A and carotenoids.

#### DENTAL CARIES IN THE TWO GROUPS

By chance the A group on the good diet had fewer cavities, 25, as against 41 in the B group on the less adequate diet. By the end of the experiment Group A gained 8 cavities as against 24 in Group B. Superficially it would appear that Group B had deteriorated markedly. The gain in cavities is not statistically significant by the chi-square test. Nevertheless, biologically, it may well be significant. Initially, Group B had 16 more cavities than Group A, thus possessing a far heavier concentration of infective bacteria than Group A. The increase could, therefore, have been due to this greater mass of infection, apart from a possible weakening of tooth structure due to a defective diet.

#### EXAMINATION OF THE EYES

At the end of the project, Dr. P. H. Boshoff, an experienced ophthalmic surgeon, kindly examined 54 boys by means of an ophthalmoscope and a slit-lamp microscope. The simple question put to him was whether he could select the children who were on the less adequate diet. In the view of the authors, all studies concerning eyes in malnutrition should have the active co-operation of someone who has specialized in eye diseases.

As one child may have had more than one lesion, the number of conditions add up to more than 54, the number examined. The ophthalmic surgeon drew up a list, placing the number of boys in various categories. He did not know to which dietary group they belonged. Table VI was constructed from these data. The following notes are by Dr. Boshoff:

"Fresh lesions of significance to some slight extent (slight, because intercurrent colds, allergic variations, a bad night's sleep and other similar situations can produce them) can be listed as: cellular cornea, thickened corneal nerves, spring catarrh, swollen punctæ, corneal infiltrate and congested conjunctiva. The cases thus

TABLE VI.

THE EYE CONDITIONS FOUND IN THE DIEPKLOOF BOYS  
AT THE END OF THE SURVEY

	Group A	Group B
Pigment on cornea.....	9	8
Increased corneal cellularity.....	4	4
Corneal scars.....	13	14
Conjunctival pigment naevus.....	2	2
Chalazion.....	0	1
Spring catarrh.....	1	3
Swollen lacrimal punctæ.....	0	3
Foreign body on cornea.....	0	2
Congenital pigment on posterior corneal surface.....	0	1
Pigment crescent of optic disc.....	0	1
Thickened corneal nerves.....	1	3
Corneal infiltration.....	0	1
Cataracta cœrulea.....	0	1
Old corneal perforations.....	0	1
Congested conjunctiva.....	0	1
Melanosis scleræ.....	1	1
Trachoma.....	2	0
Pterygium.....	3	0
Normal.....	4	4

affected are 13 from Group B and 6 from Group A. This group is most likely to contain the underfed boys, while the normal ones, 4 from Group A and 4 from Group B, are judged to be properly fed." (Comparing the 13 boys in Group B and 6 in Group A suffering from fresh lesions with the rest in each of Groups A and B, chi-square = 4.82, P between 0.05 and 0.02. There thus appears to be a statistically significant association between acute eye disease and the dietary group.)

"However, the above diagnosis that any of the boys examined can be labelled as cases of malnutrition rests on extremely slender evidence. A distinct differentiation may be observed amongst these boys only if some insult to their eyes comes into play—for example, in the event of an epidemic of conjunctivitis. Then, there will probably be a larger percentage of complicating features, higher severity of the inflammation and longer convalescence amongst those suffering from malnutrition."

Table VII was constructed in an attempt to discover whether the vitamin values could be associated with the clinical findings as noted by Dr. Boshoff. There was no association.

The five cases in Group B with three or more lesions, including a recent acute process, had a mean total carotenoid reading of 47.2 micrograms, 59.2 I.U. vitamin A and 0.22 mg. ascorbic acid. Their carotenoid value is markedly lower than that of the four "normal" eyes in Group B (62 micrograms) but this is not statistically significant by analysis of variance. A level of 40 I.U. vitamin A per 100 ml. serum is the level below which xerosis conjunctivæ becomes apparent, according to van Veen and Postmus,<sup>20</sup> working in Indonesia. We would suggest that the signs described above occur even earlier than the xerosis conjunctivæ. In South Africa the final stages of eye disease due to malnutrition have been described by Blumenthal.<sup>21</sup>

TABLE VII.

DETERMINATION OF NUTRITIONAL CONDITION BY EYE EXAMINATION, RELATED TO SERUM VITAMIN A, TOTAL CAROTENOIDS AND ASCORBIC ACID IN MG. PER 100 ML. BLOOD			
	Ascorbic acid mg. per 100 ml. mean	Vitamin A I.U. per 100 ml. mean	Carotenoids mg. per 100 ml. mean
<i>Group A:</i>			
Underfed.....	0.42	72	70
Normal.....	0.47	62	70
<i>Group B:</i>			
Underfed.....	0.26	60	56
Normal.....	0.23	65	62

As in the case of skin signs, we conclude that, under the particular conditions of our experiment, competent clinical examination discloses signs of abnormality at an earlier stage than the blood or serum estimations of vitamins. Especially in the case of the eye, the divergences from good health are of a non-specific nature, mainly manifested by an increased susceptibility to any insult offered, whether it be an injury or an infection.

The boys were questioned about night blindness. No cases were found. Special tests for this condition were not carried out.

#### LIVER FUNCTION TESTS

As has been shown, especially by the work of Gillman and Gillman,<sup>14</sup> liver damage is common amongst the South African Bantu.

As already stated,<sup>3</sup> six boys in Group A and four in Group B had a slightly enlarged liver at the beginning of the experiment. At the second examination, except in two cases in Group A, this could not be confirmed, as the original enlargement, if any, had been minimal. One boy, No. 6534, was suffering from urinary schistosomiasis at the beginning of the experiment and the second, No. 6612, had a liver enlarged two fingers below the costal margin and other biochemical evidence of liver damage. The various tests for him were as follows: thymol turbidity: 7.0 Maclagan units; thymol flocculation: +++; colloidal gold: 4; gamma globulin: 2.5 g. %; urine amino acids: small glycine spots; van den Bergh test: Type II+; bromsulphthalein retention: 0.32 mg. %; total serum protein: 6.4 g. %.

In Table VIII summaries of our findings on certain liver function tests are presented.

In this table we have shown the data in terms of how many cases in each test fall beyond the limits of certain arbitrary "normal" standards, for each particular test. These data are shown as the number of "abnormal" at the commencement of the project and at the end of the project. Also shown are the number who changed from "normal" to "abnormal" during the study, and those who changed from "abnormal" to "normal" during the study.

The "normal" values in Table VIII are taken from Cecil's Textbook of Medicine.<sup>22</sup> They differ slightly from the values given by Maclagan.<sup>23</sup>

In our group there were six cases in Group A and three in Group B with abnormally high values of serum bilirubin. The children did not have jaundice, but it will be realized that to see jaundice in a dark skin is impossible. Furthermore, the Bantu sclera is often brownish, which does not add to the ease of clinical diagnosis of mild jaundice in these people.

A high proportion of the boys (17 out of 28 in Group A) had thymol turbidity values of over four Maclagan units at the beginning of the project. These boys were on the good diet. At the end of the project 18 had values exceeding four units. They were not the same boys, however, as six had developed abnormal values during the study and five had improved. As the children were not acutely ill during the experiment, acute infective hepatitis can probably be excluded as a cause of the disturbed serum protein levels producing the positive tests. The findings would be compatible with a diagnosis of hepatic fibrosis. The less adequate diet did not increase the number of boys in the B group showing abnormal values.

Serum albumin and globulin estimations are most valuable in chronic liver diseases, such as cirrhosis, in which the albumin tends to fall and the globulin to rise.<sup>23</sup> This is exactly the situation in our boys, in both groups. About 80% of them had low albumin values. There were no albumin values lower than 2.4 g. %. The albumin/globulin ratio was reversed in about one-third of the cases. Globulin values were high in a large proportion of the boys. The low albumin values, especially, suggest liver damage. The fact that about one-quarter of the boys showed high values in gamma globulin also points in the direction of hepatic fibrosis.<sup>24</sup>

As far as the bromsulphthalein retention test

is concerned, only one abnormal case was found, the boy No. 6612 in Group A, described above.

The tests so far described would suggest a goodly measure of disturbed liver function, compatible with a diagnosis of hepatic fibrosis, probably mainly due to previous chronic malnutrition, and in certain cases due to schistosomiasis. In addition, a high proportion of cases had elevated alkaline phosphatase values of more than 20 King-Armstrong units per 100 ml. serum. The number increased during the experiment. We can suggest no easy explanation for this finding, as high alkaline phosphatase values are, as far as liver disease is concerned, usually ex-

be mentioned, however, that hæmochromatosis is not uncommon amongst the South African Bantu. It may well be that mild or developing forms of pancreatic fibrosis associated with this condition exist, with consequent pancreatic fibrosis resulting in lipocaic deficiency.

#### OTHER CLINICAL AND LABORATORY OBSERVATIONS AND THE QUESTION OF PRE-EXISTING DISEASE

A more complete description of general clinical observations in these boys has been given in previous papers (LeRiche *et al.*<sup>3, 4</sup>).

TABLE VIII.

DIEPKLOOF BANTU BOYS: SUMMARY TABLE OF CERTAIN LIVER FUNCTION TESTS					
Test	Group	Abnormal cases beginning of period	Abnormal cases end of project	Cases deteriorated during study	Cases improved during study
Serum bilirubin.....	A (28)	6	6	5	4
Normal range %	B (26)	3	9	8	2
0.1 to 0.8 mg.	Both (54)	9	15	13	6
Gamma-globulin.....	A (28)	9	11	4	8
Normal range	B (26)	4	3	3	3
0.6 to 1.2 g. %	Both (54)	13	14	7	11
Albumin/globulin.....	A (28)	8	11	9	5
Ratio: abnormal	B (26)	10	8	5	7
when reversed	Both (54)	18	19	14	12
Albumin.....	A (28)	21	22	5	4
Normal range	B (26)	20	21	5	3
4.0 to 5.2 g. %	Both (54)	41	43	10	7
Globulin.....	A (28)	15	22	10	0
Normal range	B (26)	15	22	10	3
2.0 to 2.8 g. %	Both (54)	30	44	20	3
Thymol turbidity.....	A (28)	17	18	6	5
Abnormal above	B (26)	7	5	3	6
4 MacLagan units per 100 ml. serum	Both (54)	24	23	9	11

(Group A on good diet, Group B on less adequate diet.)

pected in obstructive jaundice and not in hepatic fibrosis. It should be noted, however, that Waterlow<sup>25</sup> found high values for alkaline phosphatase in West Indian Negro infants suffering from fatty liver (mean, 19.7 King-Armstrong units) and also in the apparently healthy control group (19.4 King-Armstrong units).

Dragstedt *et al.*<sup>26</sup> found that a majority of insulin-treated depancreatized dogs develop, amongst other symptoms, a progressive increase in serum alkaline phosphatase and fatty infiltration, with impairment of liver function. This particular deficiency syndrome in dogs can be prevented by oral administration of fresh or autoclaved pancreas. It is assumed that the active principle in the pancreas, lipocaic, protects the liver. Whether these facts can be related to our Bantu boys is a matter for conjecture. It should

What is often not sufficiently stressed is the effect of acute and chronic infection on nutrition, rather than the contrary effect. In the excellent paper by Spector *et al.*<sup>27</sup> it was shown that disease in the form of chronic infection was most important in preventing weight gain in infants. This would also apply to older children, perhaps to a lesser degree.

In the present group of boys, at the beginning of the project, laboratory tests showed that 26 (44.1%) had intestinal parasites, and 9 (13.9%) urinary schistosomiasis by urine examination. There were six boys (10%) with pus and bacilluria (all *B. coli*; in one case associated with *Staphylococcus albus*). All were treated with adequate doses of Gantrisin.

At the end of the project, 18.9% (10 cases) still had intestinal parasites. They had been

treated during the experiment with santonin and male fern. Urine examinations showed no schistosoma eggs, as the boys had been treated with Fouadin. There were still four cases (7.6%) with pus cells in the urine. They had also been treated during the experiment.

#### LIVER DISEASE AND SEROLOGICAL TESTS FOR SYPHILIS

The modified Ide test for syphilis was positive in 11 cases out of 57 at the beginning of the project. The possible existence of false positive serological tests for syphilis due to liver damage should be considered.

In Group B (on the less adequate diet) the four with a positive test had a normal liver according to the biochemical tests. In Group A, of seven boys with positive Eagle flocculation tests at the end of the project, six had thymol turbidity values of more than four Maclagan units. In 20 with negative Eagle flocculation tests 12 had abnormal thymol turbidity values. This difference in occurrence of abnormal thymol turbidity values is not significant by the chi-square test, but this whole question should receive further investigation. All these boys were treated with large doses of procaine penicillin G and bismuth oxychloride early in the experiment. They showed no clinical stigmata of congenital or acquired syphilis.

#### DISCUSSION

In the present paper we have not discussed the concept of subclinical vitamin deficiencies, as the assessment of such deficiencies is difficult, if not impossible, at present. Blood vitamin levels are not merely a reflection of intake or utilization. They are closely dependent upon the metabolic activity of the liver and on complex enzyme and other interrelationships which have not been adequately elucidated. Furthermore, it may also be possible that people adjust quite adequately to different levels of intake. In addition, the role of disease in modifying vitamin needs is by no means clear. Liver disease has been discussed in the present study as possibly influencing at least vitamin A and carotene metabolism and in producing false positives for syphilis in certain serological tests, but many other problems remain to be studied in this complex field.

It would appear that there is a great need for detailed biochemical studies in communities on

marginal diets, similar to the recent project by Widdowson and McCance<sup>28</sup> on children in Germany. But such studies should always include complete physical examinations by clinicians, as has been illustrated in the Diepkloof experiment.

#### SUMMARY

1. Two groups of S. African Bantu boys, 30 in each group, were placed on two different diets for one year.

2. Group A was placed on a good standard diet with high protein, fat, vitamins and minerals. The other diet, commonly consumed by urban and rural Bantu, was low in animal protein, fat, minerals and vitamins.

3. These children were clinically examined at the beginning and at the end of the experiment and a large series of laboratory tests including certain blood vitamin values, stool and urine examinations, liver function tests and chest radiography were carried out.

4. Differences in height and weight between the two groups were small at the end of the project and not statistically significant.

5. As regards the skin signs of malnutrition, at the end of the study two observers found fewer with "normal" skin in the group on the less adequate diet. In terms of the criteria used this difference was not statistically significant, though probably biologically significant. Nevertheless, when a dermatologist was asked to group the boys into a broad classification of "good", "doubtful" and "bad", without knowing their dietary category, he selected more boys as being "bad" (nutritionally!) in the B group on the less adequate diet. This selection was statistically significant.

6. Although, as expected, serum vitamin A and carotene and blood vitamin C values were lower in the B group than in the A group, such levels could not be related to skin signs of malnutrition.

7. Similarly, these vitamin levels could not be related to the occurrence of gingivitis in these children.

8. Findings in regard to dental caries were inconclusive. Unfortunately, the boys on the less adequate diet had, by chance, considerably more carious teeth at the beginning of the experiment than the other group. They also developed many more cavities during the experiment, but whether this was due to the diet or the additional con-

centration of bacterial infection could not be determined.

9. By slit-lamp examination, an ophthalmic surgeon was able to select certain boys who he felt were on the less adequate diet. His selection was statistically significant. The eye findings could not be related to the vitamin levels studied.

10. A group of liver function tests were carried out. Only certain of these are discussed in the present paper. There was evidence of liver dysfunction in both groups at the beginning of the experiment. This is suggested in the combined two groups, especially, by the following facts: (1) In the whole group 44.4% had thymol turbidity values of more than four MacLagan units per 100 ml. serum. (2) Low serum albumin levels, below 4.0 g. %, were found in 75.9% of the boys. (3) The albumin/globulin ratio was reversed in 33.3% of cases. (4) High gamma-globulin values, above 1.2 g. %, were found in 25.9% of cases. (5) High globulin values were present in 55.6% of cases. (6) Serum bilirubin values greater than 0.8 mg. % were found in 16.7% of cases.

In addition, at the beginning of the project, 35 out of the 54 boys (64.9%) had alkaline phosphatase values of more than 20 King-Armstrong units.

While the other findings could in general be compatible with a diagnosis of liver dysfunction due to chronic malnutrition, the high alkaline phosphatase values would be expected in obstructive jaundice rather than in hepatic fibrosis. Liver biopsies were not done.

11. The question of concomitant disease, such as intestinal parasitism, schistosomiasis, cystitis and syphilis, is discussed.

We wish to express our thanks for assistance to the Director and staff of the South African Institute for Medical Research, Johannesburg, the members of the Nutrition Unit of the Council for Scientific and Industrial Research, the Superintendent and staff of the Baragwanath Hospital, the Director of the Institute of Pathology, Pretoria, and the Union Health Department.

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EVALUATION OF TREATMENT OF  
CANCER OF THE BREAST AT  
EDINBURGH UNIVERSITY

A review of the clinical records and pathology of breast tumour in cases treated by simple mastectomy and irradiation between 1941 and 1947 and surviving five years is published by an American surgical pathologist who visited Edinburgh from St. Louis at Dr. Robert McWhirter's invitation. There were 786 such survivors out of 1,882 patients treated.

Evaluation of the therapy was complicated by the fact that over 220 patients were sterilized immediately after mastectomy and some underwent resection of axillary lymph nodes or received stilboestrol or testosterone. The incidence of local recurrence in the operable group was higher than in properly selected operable cases for radical mastectomy. In several instances axillary nodes removed after irradiation appeared unaffected. In 47 patients there were severe changes from the irradiation therapy (which was given in two weeks) and in three amputation of the arm was necessary. It is emphasized that these are five-year survivals and that at least 44 patients were dying of cancer at the end of that period.

It is concluded that McWhirter has not jeopardized well-planned radical mastectomy for the patient with operable breast cancer and that this disease is often incurable in Scotland as well as in other parts of the world.—L. V. Ackerman, *Cancer*, 8: 883, 1955.

# REVIEW OF FOREIGN BODY ENDOSCOPY OVER A PERIOD OF THIRTY YEARS\*

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IN THIS PAPER I am reporting a series of 100 endoscopic removals of foreign bodies from the larynx, trachea, bronchi and œsophagus. They were all performed in the Department of Oto-Laryngology of the Royal Victoria Hospital, Montreal, and they extended over a period of 30 years.

An analysis of the 100 foreign bodies (Table I) shows that four were situated in the larynx, six in the trachea, 24 in the bronchi and 66 in the œsophagus.

## ETIOLOGY

Carelessness is by far the most common cause of lodgement of foreign bodies in the food and air passages. Children are the most frequent sufferers. In this series of foreign bodies in the larynx, trachea and bronchi there were 21 cases in which the ages ranged from 11 months to three years.

Infants and small children have a natural tendency to put everything into the mouth—coins and small toys which they are given to play with, as well as other objects which they find on unswept floors. When a child with a foreign body in its mouth is playing, running, jumping, laughing or coughing and suddenly takes a deep breath, the vocal cords are opened at their widest and the foreign body is thus easily aspirated. Also if a child not known to have put anything into his mouth develops symptoms referable to the tracheobronchial tree or œsophagus, then a history of gagging, choking or coughing is always suggestive of a foreign body. The next consideration is whether the foreign body was aspirated or swallowed.

Foreign bodies in the respiratory tract and œsophagus may be classified as inorganic and organic substances. Inorganic foreign bodies include the metals, of which iron and steel are the least irritating, and are opaque to x-rays. The organic foreign bodies include peanut kernels, beans, peas, etc., and with the exception of bone are non-opaque to x-rays.

\*From the Department of Oto-Laryngology, Royal Victoria Hospital, Montreal. Read at the Combined B.M.A.-C.M.A.-O.M.A. Meeting, Toronto, June 21, 1955.

TABLE I.

ANALYSIS OF 100 FOREIGN BODIES  
REMOVED AT THE ROYAL VICTORIA HOSPITAL, MONTREAL,  
DURING A 30-YEAR PERIOD

Larynx—4 cases		Trachea—6 cases	
Object	Age of patient	Object	Age of patient
Rivet	4 months	Fish bone	16 months
Chicken bone	11 months	Peanuts	11 months
Celluloid	1 year	Peanuts	2 years
Celluloid	15 months	Closed safety pin	21 months
		Corsage pin	12 years
		Key	13 years
Bronchi—24 cases		Esophagus—66 cases	
Object	Age of patient	Object	Age of patient
Peanut (7 cases)	18, 20, 22, 24, 27 months 12 and 21 years	Chicken bone (20 cases)	18 - 69 years
Pea (2 cases)	3 and 13 years	Meat bone (5 cases)	(one aged 86 years)
Piece of apple	13 months	Pork bone	
Orange seed	11 months	Meat (3 cases)	
Corn	2 years	Fish bone (10 cases)	(2 aged 80 years, 1 aged 89 years)
Stone	16 months		
Tack (3 cases)	11 and 22 months 3 years	Peanut	
Chicken bone	52 years	Corn	
Pin	20 years	Apricot stone	
Tooth (2 cases)	6 and 28 years	Prune stone (2 cases)	
Fragment of dental plate		Brass rivet	
Broncholith		Thumb tack	
Hardened mucus—like bullets	10 years	Jingle bell	
Whistle		Spring of clothes-pin	
		Whistle	
		Safety-pin (5 cases) (3 open)	(1 aged 6 wks)
		Three tin discs (1 case)	
		Coins (9 cases)	
		Dental plates (2 cases)	

Of all the foreign bodies aspirated in the tracheo-bronchial tree, the most acutely dangerous to life are vegetable foreign bodies, such as peanut kernels, beans or peas. These foreign bodies tend to swell and produce swelling of the mucous membrane. The inflamed mucous membrane pours out large quantities of tenacious secretions which overwhelm the patient, and inhibit the cough reflex which is the "watch-dog" of the lungs. The patient virtually drowns in his own secretion from a purulent tracheo-bronchitis. Children under three years of age should never be given peanuts or peanut candy. They cannot chew peanuts, and are very likely to choke and aspirate them into the lungs.

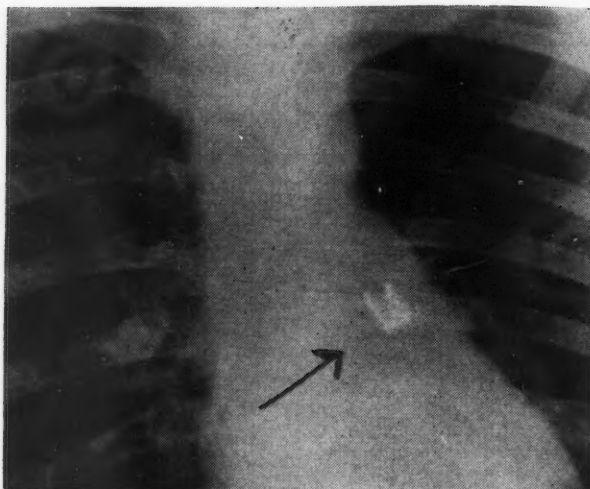


Fig. 1.—Tooth in the left bronchus. I.H., age 6 years. November 1, 1934. Two weeks previously tonsils and adenoids were removed and at the same time eight teeth were extracted. Shortly afterwards patient developed toxic symptoms, cough and respiratory distress. A chest radiograph revealed a tooth in the left bronchus. Direct bronchoscopy under Avertin anaesthesia. After aspiration of the pus and granulations from the left main bronchus, the tooth was visible, and was removed. Uneventful recovery.

#### FOREIGN BODIES IN THE AIR PASSAGES

##### *Symptoms:*

Overlooked foreign bodies are common. This is due to the fact that a history of the accident is frequently unobtainable, and that a symptomless interval occurs soon after the inspiration of some foreign bodies. Even when symptoms develop, a wrong diagnosis is not infrequently made of asthma, pneumonia, or bronchitis; in the past it included diphtheria. In some of my foreign body cases, when the practitioner was consulted, he gave his opinion that the child had

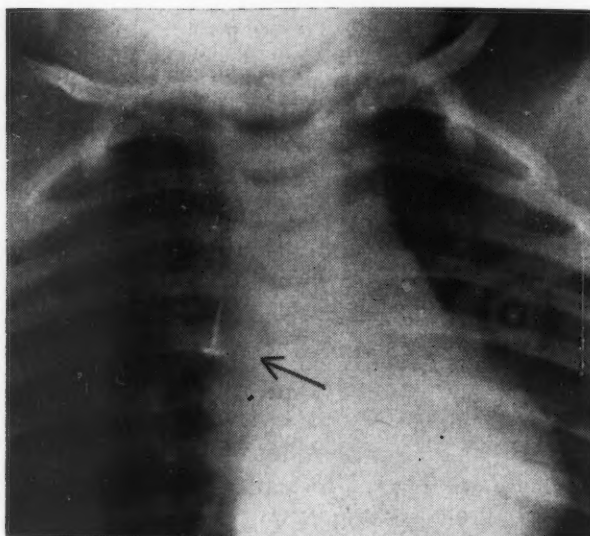


Fig. 2.—Tack in right main bronchus. P.M., age 11 months. July 10, 1936. Two days before admission, infant "swallowed" a small tack. Symptoms of cough, dyspnoea, wheezing and retraction of chest followed. The tack, visible in the right chest by x-ray, was removed by direct bronchoscopy under Avertin anaesthesia. Symptoms subsided in a week.

swallowed rather than aspirated the foreign body. He thus failed to appreciate the urgency and gravity of the respiratory symptoms which threatened the child's life. The following symptoms may be met with when foreign bodies are present in the larynx, trachea, and bronchi: hoarseness, aphonia, croupy cough, wheezing, dyspnoea, haemoptysis, cyanosis, and anxious facies. Croup suggests a subglottic swelling. There is a subjective sense that a foreign body is present, and indrawing of the suprasternal notch and lower sternum.

A movable tracheal foreign body may produce a thrill on palpation. The lungs will be clear. Bronchial foreign bodies may produce symptoms somewhat similar to those of laryngeal foreign bodies. Wheezing is a cardinal symptom of partial or complete bronchial obstruction by a foreign body, and may be followed by one or more of the following complications: emphysema, atelectasis, bronchiectasis, lung abscess, drowned lung. Foul blood-tinged secretion suggests a long sojourn of a foreign body.

##### *Diagnosis:*

The diagnosis is made by clinical history, fluoroscopic and x-ray findings, bronchography, and bronchoscopy.

A fluoroscopic and radiographic examination to exclude a foreign body should be made in every case with symptoms referable to the larynx, trachea, bronchi, lungs or oesophagus.

The fluoroscopic examination should be done before radiography. The radiograph should include the area from the base of the skull to the tuberosity of the ischium. Except for very urgent reasons, no bronchoscopic examination should be made before the fluoroscopy and radiography.

In the case of foreign bodies, the signs of diagnostic importance are those of partial or complete bronchial obstruction. In partial bronchial obstruction, the air can enter the lung but cannot pass out, and thus produces an obstructive emphysema. The x-ray film will show the heart and trachea displaced to the unaffected side. In complete bronchial obstruction, the air can neither enter nor leave the lung. The retained air is absorbed and thus produces an atelectasis. The radiographs show the heart and the trachea pulled over to the affected side.

Obstructive emphysema and atelectasis are two x-ray signs which in a child are almost diagnostic of a foreign body.

Radiography is invaluable in localizing opaque foreign bodies. A radiograph of the cervical region showing an object in the sagittal plane indicates that the object is in the larynx or trachea, because this position was necessary for it to pass through the glottic chink. If there is a flat object in the lateral body plane, the object is in the oesophagus.

Bronchography with iodized oil was of some aid in the localization of the foreign body in several cases.

#### *Treatment:*

Blind digital efforts at removal of foreign bodies should be avoided, as the tissue may be traumatized and the foreign body pushed further down. The suspension of the patient by the heels is particularly dangerous in the case of a movable foreign body in the trachea. About 98% of the foreign bodies which have passed from the mouth into the larynx, trachea, bronchi and oesophagus can be removed by peroral endoscopy. It is dangerous to delay removing a foreign body in the hope that it will be expelled spontaneously. This occurs rarely. Endoscopic removal of foreign bodies is the immediate and only treatment. It saves life and function and avoids complications.

#### FOREIGN BODIES IN THE OESOPHAGUS

Foreign bodies in the oesophagus will usually be found lodged near one of the normally narrow portions, namely at: (a) the cricoid cartilage; (b) the narrow tortuous portion at the level of the aortic arch; (c) the cardia. In this series the majority were found at the cricoid constriction. As a rule any substance passing the cricoid will enter the stomach provided there is no abnormal constriction further down. A foreign body which has entered the stomach may be vomited, then enter the oesophagus and from there be regurgitated into the pharynx.

#### *Symptoms:*

Dysphagia is the most common symptom. Vomiting is frequent. After an initial choking or gagging, or even without these, there may be a constant subjective sense of a foreign body. Pain may be produced by the impaction of a large object, by penetration of oesophageal wall or by secondary inflammation. Pain cannot be relied upon as a means of localizing the foreign body. Hæmatemesis or fever may occur.

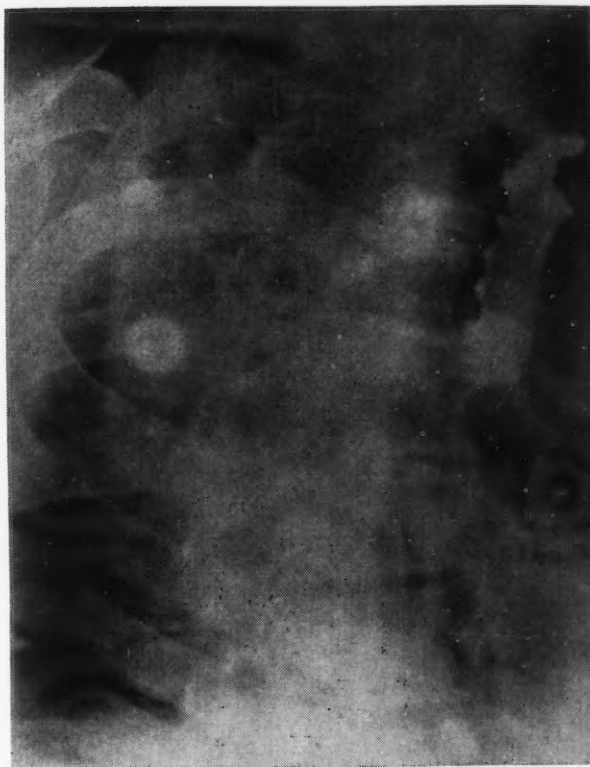


Fig. 3.—Denture in oesophagus. G.L., age 31. January 21, 1937. Direct oesophagoscopy under general anaesthesia removed a large denture from the aortic region of the oesophagus.



Fig. 4.—Finnan haddie bone in oesophagus. Mrs. X., age 80. February 26, 1955. Swallowed a fish bone and immediately felt a sharp sticking pain in the throat with every act of swallowing, even saliva. Considerable mucus was visible in the left pyriform sinus. The bone was removed from the cricoid region by direct oesophagoscopy under general anaesthesia.

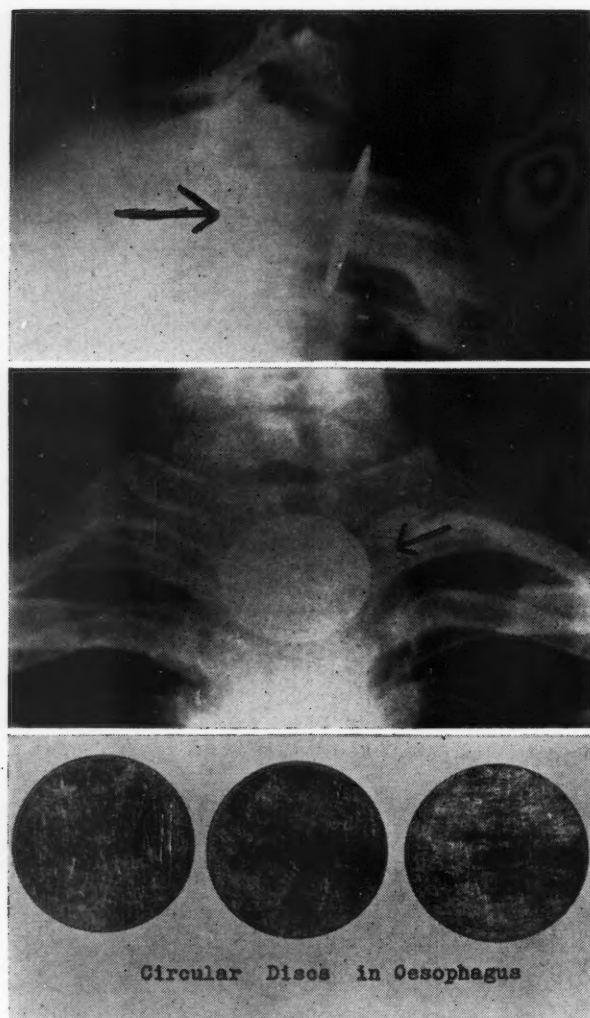


Fig. 5.—Three tin discs in the œsophagus. A.B., age 19 years. August 1936. History of painful deglutition for two days. Direct œsophagoscopy under gas and ether anaesthesia. Three tin discs adherent to one another were removed from the upper third of the œsophagus. Only one foreign body was suspected. Cured.

There may be symptoms referable to the air passages and due to overflow of secretion from an obstructed œsophagus, trauma of the larynx during attempt at digital or instrumental removal, and erosion of the foreign body in its passage from the œsophagus into the trachea. Cough was a rare symptom of a non-obstructive foreign body of the œsophagus. It was, however, a constant symptom in cases of obstruction of the œsophagus by foreign body with secondary laryngo-tracheo-bronchitis from overflow into the larynx of secretions and food unable to pass down the œsophagus during attempts to swallow. This overflow may cause tracheo-bronchitis and aspiration pneumonia. True lobar pneumonia is very rare.

A foreign body may produce immobility of the larynx and laryngeal stridor. Dyspnoea may be

caused by the œsophageal foreign body's pressing on the trachea. The foreign body may ulcerate through the party wall and cause bronchial symptoms from the leakage.

Secretion in the pyriform sinuses is a frequent sign in stenosis of the œsophagus.

#### Diagnosis:

The diagnosis and localization of a foreign body—opaque or non-opaque—is first made by a fluoroscopic examination without or with the use of a radio-opaque mixture, such as barium, either in solution or in capsule. This may show the foreign body in silhouette, or demonstrate the interference with swallowing function. Fish bones and non-opaque foreign bodies may be localized in this manner. A fluoroscopic and film examination, antero-posterior and lateral, should be made to show the greatest plane of the foreign body, and also to exclude the possibility of multiple foreign bodies. A roentgenogram taken laterally, low down in the neck but clear of the shoulder, will often show a bone invisible in the antero-posterior exposure.

If a foreign body has been removed, the swallowing function of the patient should always be tested by ingestion of sterile water. If the patient cannot swallow, the œsophagoscope should be passed again.

#### Dangers and Difficulties:

A foreign body passing from the œsophagus into the gastro-intestinal tract frequently causes no trouble. Even large bodies without sharp projections have been known to be swallowed and recovered later from the stools.

Sharp-pointed foreign bodies perforate the œsophagus more often than the bronchial wall. When this occurs, there may be a pericœsophagitis with extensive cellulitis and often mediastinitis. Digital attempts at removal or improper instrumentation may produce extensive trauma. It is dangerous to push down a foreign body blindly from the œsophagus into the stomach with a tube or bougie. Perforation of the œsophagus may produce fatal results.

When a needle has passed into the stomach, there is a danger of perforation during its passage downwards. The patient should be radiographed at least every day, and surgical interference delayed as long as the object continues to move downwards and shows no evidence of perforation.

Complete obstruction of the œsophagus may result from swallowing a large foreign body which completely occludes an otherwise normal œsophagus, or from the lodgement of a small portion of food or other substance in a lumen narrowed by disease or injury as in cases of lye stricture and malignancy.

One must always bear in mind the possibility of asphyxiation from tracheal compression when removal of a foreign body from the œsophagus is attempted.

#### SUMMARY

One hundred foreign bodies were removed from the larynx, trachea, bronchi and œsophagus. The youngest patient was a six-week-old infant with an open safety-pin in the œsophagus, and the eldest was 89 years old with a fish bone in the œsophagus.

Of the foreign bodies in the larynx and tracheo-bronchial tree, 60% were in infants under three years of age. The youngest child was four months old, with a rivet in the larynx.

It was not uncommon to overlook a foreign body because of the symptomless interval following its aspiration, and because of errors in diagnosis. It is of vital importance to differentiate between an "aspirated" foreign body and a "swallowed" foreign body. Obstructive emphysema and atelectasis are two x-ray signs which in a child are practically diagnostic of a foreign body.

The vegetable foreign bodies are the most acutely dangerous to life and function. Nine peanuts were removed from the trachea and bronchi. The œsophagus yielded 25 chicken and meat bones, 10 fish bones, five safety-pins, and nine coins.

Ninety-seven patients were cured, including three who required lobectomy for extensive bronchiectasis, produced by the undiagnosed, prolonged sojourn of the foreign body in the bronchus.

There were three deaths. In these cases the foreign bodies were removed but the patients died from complications. The first patient was a moribund 22-month-old child (temperature 106.2° F.), with an overlooked tack in his right bronchus for eight days. Another was a 13-month-old child who aspirated a piece of apple into the trachea and left bronchus. Both died from an extensive bronchopneumonia. The third

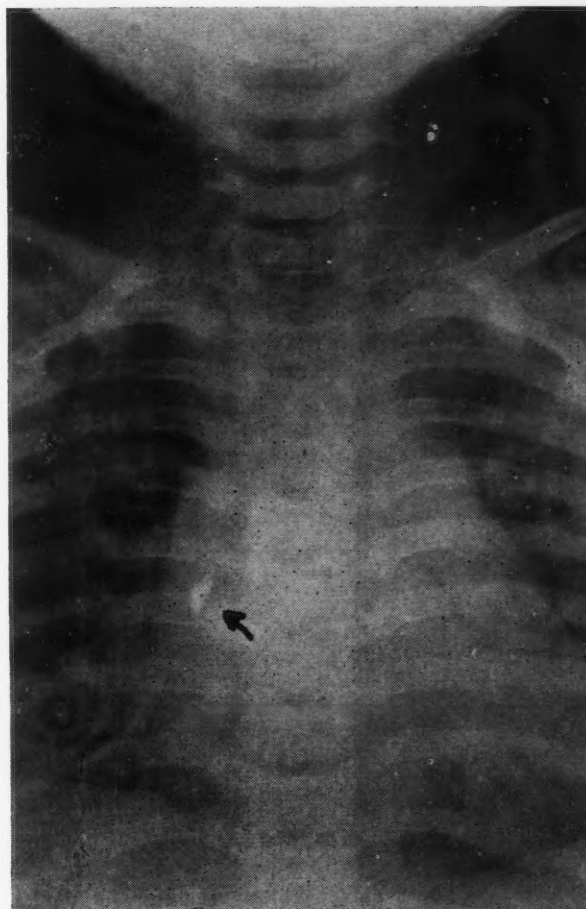


Fig. 6.—Stone in right bronchus. A., age 16 months. September 2, 1953. While playing, child aspirated a foreign body. She choked and for several minutes had difficulty in catching her breath. Then she began to wheeze and had paroxysms of coughing. She was admitted to a hospital, where an x-ray of the chest showed a radiopaque foreign body triangular in shape, in the right main bronchus. There was obstructive emphysema of the right lung. Bronchoscopies were carried out and a tracheotomy was done. Owing to the difficulty experienced in removing the foreign body I was called in consultation. Under light ether anaesthesia I passed an infant-size bronchoscope through the tracheostomy opening. The mucous membrane of the right bronchus was so swollen that it covered the foreign body. After aspirating the pus and controlling the bleeding from the granulations, the foreign body was removed trailing the bronchoscope. It proved to be a little stone, coal black in appearance. The breathing immediately improved. Patient was discharged cured.

patient was a woman of 48 who swallowed a ragged pork bone, and in whom unsuccessful attempts were made *elsewhere* to dislodge the bone on two successive days by blind bouginage and the use of emetics. Before œsophagoscopy, the patient had a chill lasting for 15 minutes, and a temperature of 105° F. Six days after removal of the bone she died suddenly from a perforation of the œsophagus and the arch of the aorta.

There is only one treatment for foreign bodies in the food and air passages—early endoscopic removal. It saves life and function and avoids complications.

# TREATMENT OF ARTERIAL HYPERTENSION WITH RESCINNAMINE\*, A NEW ALKALOID ISOLATED FROM RAUWOLFIA SERPENTINA†

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AS THE USE of various preparations of *Rauwolfia serpentina* in the treatment of arterial hypertension has yielded many interesting results, several workers have been concerned with the study of the active principles of the plant. At least eight alkaloids have been found, but until recently reserpine was thought to be the only potent one.

In 1954, Klohs, Draper and Keller<sup>1</sup> isolated a new active alkaloid from the alkaloidal extract of *Rauwolfia serpentina*, also called the alseroxylon fraction. This new substance is the 3:4:5-trimethoxycinnamic acid ester of methyl reserpate and is called rescinnamine. The chemical structure of this new product is shown in Fig. 1.

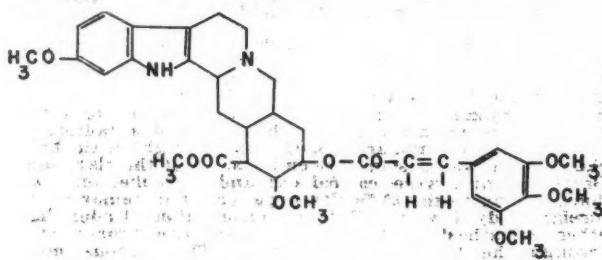


Fig. 1.—Structural formula of rescinnamine.

Pharmacological studies with this alkaloid were made by Cronheim *et al.*<sup>2,3</sup> Rescinnamine was shown to have all the typical pharmacological properties of reserpine and of the alseroxylon fraction of *Rauwolfia serpentina*. Compared with the latter fraction, it was shown to be more potent on a weight basis, and similar to reserpine. Observations in dogs revealed that rescinnamine administered either orally or intravenously gave the same pharmacological response as *Rauwolfia serpentina* and the pure alkaloid reserpine; namely, bradycardia, lowering of arterial blood pressure, and sedation.

\*Generously supplied by Mr. G. Garstone, Dr. H. G. McWaters and Dr. L. T. Mann, from the Riker Laboratories.

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In order to evaluate this new drug clinically in patients with arterial hypertension, a group of hypertensive subjects was submitted to oral rescinnamine therapy.

Nineteen patients suffering from arterial hypertension were treated with rescinnamine given orally. Twelve had benign essential hypertension; six suffered from the arteriosclerotic type of benign hypertension and one had hypertension of renal origin secondary to chronic pyelonephritis. Complete clinical, radiological and laboratory investigation of the cardiac, renal, cerebral and ophthalmoscopic status was made in each patient. Fifteen patients were women and four were men. The age group ranged from 35 to 65 years. The patients were seen weekly at our outpatient clinic, and blood pressure was taken in the recumbent position with criteria already described.<sup>4</sup> All were ambulatory and seen under normal activity.

The patients were studied before rescinnamine therapy during a period of control, which was under eight weeks in only two patients and which averaged 14 weeks. During the control period, placebos were given to 12 patients and phenobarbital to four, and one patient received no medication at all. Patients H.R. and A.M. received reserpine at a dosage varying from 1 to 1.75 mg. a day.

Rescinnamine therapy was administered for periods ranging from 5 to 31 weeks with an average of 18 weeks; only four patients received rescinnamine for less than 10 weeks and none for less than five weeks.

The drug was given orally in the form of 0.25 mg. scored white tablets. Dosage varied from 1 to 2 mg. a day. No other drug was given during rescinnamine therapy.

## RESULTS

As seen in Table I, very slight changes in the mean blood pressure were obtained during treatment with rescinnamine. Eleven patients showed a slight fall both in systolic and diastolic blood pressure, with an average fall of 16 mm. Hg for the systolic and 6 mm. Hg for the diastolic blood pressure. Two subjects had a rise in mean systolic and diastolic blood pressure. Of the two patients who received reserpine during the control period, patient H.R. showed a slight fall in both systolic and diastolic blood pressure, whereas patient A.M. had no definite change in the

TABLE I.

Patient	Control		Rescinnamine	
	B.P.	Duration in weeks	B.P.	Duration in weeks
A.S.	160/92	26	147/82	6
H.R.	242/109	20	228/100	8
G.C.	178/98	10	212/122	24
D.P.	210/112	8	201/112	26
C.L.	192/97	15	189/96	5
W.L.	172/106	1	176/98	12
J.G.	182/105	11	216/118	19
E.H.	162/98	22	148/84	18
A.A.	184/88	10	169/80	27
L.B.	170/94	17	170/87	22
H.B.	191/97	9	184/87	31
A.D.	176/85	27	167/83	22
H.L.	220/105	9	210/100	27
R.H.	198/100	9	172/96	19
A.M.	150/88	25	147/94	7
I.M.	264/116	4	236/116	18
L.M.	206/106	9	214/110	23
L.M.	162/92	32	148/84	13
E.S.	238/105	9	206/100	23
Average	192.5/99.5	14	186/97.5	18

mean blood pressure during rescinnamine therapy, nor did the four remaining patients. During the control period, the average blood pressure for the 19 patients was 192.5/99.5 mm. Hg. During rescinnamine therapy it was 186/97.5.

#### SIDE-EFFECTS

The other pharmacological actions of rescinnamine as compared with reserpine were rather slight and disappeared spontaneously with no need for reducing dosage (Table II). Bradycardia

TABLE II.

SIDE-EFFECTS	
Nightmares	2
Bradycardia	0
Loose stools	2
Sedation	3
Somnolence	2
Nasal congestion	5
Increased appetite and gain in weight	2
Nervous depression (? possible coincidence)	1

was not observed in any patient. Sedation was obtained in only three patients and somnolence in two. Nightmares occurred in two patients. Nasal congestion was observed in five patients. Two patients suffered temporarily from loose stools; two had increased appetite and gain in weight. One patient suffered from a slight and transient nervous depression which was probably coincidental as it disappeared spontaneously without interruption of rescinnamine therapy.

#### DISCUSSION

Compared with reserpine therapy, the treatment of arterial hypertension with oral rescinnamine has not, in our hands, given any significant results in the dosage administered (1-2 mg. per day). The dosage given was the equivalent on a weight basis of the one usually given with reserpine. Contrary to the findings in animal experiments and also the clinical results obtained by the group of Hershberger, Hughes and Dennis,<sup>5</sup> rescinnamine seems clinically to be a less potent alkaloid than reserpine. Increasing dosage might give the usual reserpine response; this is now under study at our clinic.

Smirk and McQueen<sup>6</sup> have recently reported hypotensive effects similar to reserpine when rescinnamine was substituted for the former. However, of the 32 patients treated with rescinnamine, only 8 received the drug alone while the remaining 24 received pentolinium simultaneously.

It is difficult, in our opinion, to assess the hypotensive effect of rescinnamine when pentolinium is given concurrently, and our findings make it impossible for us to agree with these authors' conclusion that "there is no important difference between the hypotensive effects of rescinnamine and those of reserpine."<sup>6</sup>

However, intramuscular administration of rescinnamine seems to produce a more significant lowering of blood pressure. This will be the subject of another publication.

#### SUMMARY AND CONCLUSIONS

Nineteen hypertensive subjects were submitted to oral therapy with rescinnamine, a new alkaloid isolated from *Rauwolfia serpentina*.

On a weight basis, orally administered rescinnamine is clinically a less potent alkaloid than reserpine: lowering of blood pressure was not significant and side-effects were rather slight and transient.

We wish to express our sincere thanks to the Misses Fernande and Lucette Salvail, R.N., for their collaboration in the course of the present study.

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## Case Reports

### ACTH TREATMENT OF ASTHMA IN PULMONARY TUBERCULOSIS\*

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F.C.C.P.,† Montreal

ABOUT A YEAR AGO, a woman came to me to inquire whether it would be possible to do something for her 24-year-old daughter who had suffered from asthma from the age of 12, and had spent a year in a sanatorium two years previously for active tuberculosis, since cured by rest and antibiotics. Since she returned home, her asthmatic attacks had been more and more severe and lately almost constant, despite the usual armamentarium of antiasthmatic drugs, except ACTH. She had been told that she could not be given ACTH because she had had tuberculosis. Few greater injustices could be done to such sufferers, for, contrary to a widely held belief, ACTH and cortisone do not have identical effects on the course of tuberculosis in experimental animals.

In 1951 and 1952, Le Maistre and Tompsett,<sup>1</sup> from two different studies on guinea pigs and rats, concluded that ACTH does not always have the same deleterious effects as cortisone on tuberculosis. Their results suggested that ACTH might usefully be employed in human tuberculosis, especially in combination with antibiotic therapy.

In February 1953, Bacos and Smith<sup>6</sup> reported the effects of ACTH and streptomycin in the treatment of rabbits infected with *R<sub>1</sub>* strain tubercle bacilli. Their experiments indicated that ACTH does not materially reduce the resistance of previously sensitized rabbits to tuberculosis and that it can be administered safely if streptomycin is given simultaneously.

In 1954, Morgan, Wanzer and Smith<sup>3</sup> concluded from a study on white rabbits infected with *R<sub>1</sub>* bacilli that ACTH has no deleterious effect in dosage equivalent to the human therapeutic one, but does have a harmful effect in much higher amounts. These effects, however, can be neutralized by streptomycin. On the other hand, they showed that cortisone, even in

moderate doses, exerted an enhancing effect on tuberculosis that could also be controlled by streptomycin. In 1954, Houghton<sup>5</sup> reported the results of administration of ACTH to tuberculous patients to overcome hypersensitivity reactions to antimicrobial drugs. This appears to have been accomplished without harmful effects on the tuberculosis, which responded well to the combined treatment and continued to respond well to antimicrobial therapy after the withdrawal of ACTH.

On the basis of experimental results, whenever ACTH or cortisone may be indicated in the presence of active tuberculosis, the preferred drug would appear to be ACTH.

In bronchial asthma complicating active tuberculosis and likewise in arrested tuberculosis, if the usual treatment does not relieve attacks we give ACTH in doses not exceeding 20 units a day; this is usually sufficient to stop the attacks without tuberculous spread provided the patient receives streptomycin, PAS and isoniazid.

Of 18 tuberculous patients who had been treated for asthma for more than a year, 15 responded well to the usual treatment and did not require ACTH. The remaining three badly needed ACTH and greatly improved with it, to the extent of having no more attacks after over a year of treatment. The clinical, radiological and physiological data in one of these cases before and after treatment are set out below.

Mr. R.R., 20 years old, was first seen by us in September 1952 for asthmatic attacks complicated by emphysema and pulmonary tuberculosis. His asthma started when he was three years old; during his childhood, when it was absent, he became covered with eczema. He spent more and more time at home and in hospital and finally had to stop going to school. In 1950 a radiograph showed a shadow at the left apex, for which he was hospitalized at the St. Joseph Sanatorium where he was found positive for tubercle bacilli. He was treated with streptomycin and PAS. Two years later, when we saw him for the first time, he was still in hospital with positive sputum, very short of breath even at rest, and coughing a great deal though raising very little sputum.

He was a thin boy weighing 92 lb., hyperpnoeic, with a barrel chest. On auscultation a great diminution of vesicular murmur was noticed over both lungs, with marked expiratory wheezing. The heart beat was fast and feeble, and the second pulmonary sound was louder than the second aortic. The blood pressure was 110/70. There was no liver enlargement and no ankle oedema. Tests were highly positive for allergy to many inhalants and moderately positive to some foodstuffs. The ECG showed focal bundle branch block and was suggestive of chronic cor pulmonale.

We advised his physician to give Vaponefrin, aminophylline (18 grains a day), and antihistaminics, to desensitize the patient to dust, ragweed, pyrethrum and five types of trees, and to eliminate from his diet the foodstuffs to which he had been found sensitive. Main-

\*Lecture given in Winnipeg at the 55th Annual Meeting of the Canadian Tuberculosis Association, June 9, 1955.  
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tenance of treatment with isoniazid and PAS was also advised. He improved slightly on this regimen for a while, but a year later he came back worse than before, in status asthmaticus for two weeks, cyanotic, with wheezing and moist rales, liver enlargement and ankle oedema despite the treatment. He was still sputum-positive, but we had no choice and we started ACTH 20 units a day, intravenously for the first five days and intramuscularly for the next three weeks, followed by 10 units intramuscularly every day for the following year. As he was much improved a year later, we lowered the dose to 5 units a day, which he still receives. He continues to take isoniazid, has been sputum-negative for more than a year and has had no asthmatic attacks. During the last two months he has felt as if he had never had asthma but complains of exertional dyspnoea. He is not cyanotic and has no rales, although the vesicular murmur is still weak; the ankle oedema has disappeared. The ECG and physiological data have greatly improved (Tables I, II and III).

#### COMMENTS

The maximum breathing capacity is still low, but increased more than 50% during treatment. It should be emphasized that tests were not done in the fall of 1953 when the patient was seen in status asthmaticus, because he was too ill. The lung volume shows an increase in vital capacity of almost one litre and a decrease of residual capacity by 830 c.c., so that the percentage of residual capacity over total lung volume diminished by almost 20% during treatment.

The arterial blood studies showed a diminution in CO<sub>2</sub> content at rest, which is still too high, for it should not exceed 50 vol. %. The saturation, however, is now normal while the patient breathes room air. The pCO<sub>2</sub> is also normal, as is the pH, which was on the acid side before. The alveolar air gradient improved because of more effective alveolar ventilation and distribution, as shown by the diminution of the gradient and of the percentage of dead space over tidal air. This improvement is also reflected in the arterial blood at exercise, as can be seen by comparison of acid base equilibrium and oxygen saturation before and after treatment.

When we started ACTH treatment, this tuberculous patient had asthma complicated by emphysema with alveolar respiratory insufficiency and cor pulmonale grade IV. It would have been a great mistake not to give ACTH to this patient and the two others who had a similar clinical picture. These three cases are all sputum-negative today, and we are of the opinion that ACTH did not interfere with their clinical progress so far as tuberculosis was concerned. It would seem that the relief of asthmatic

TABLE I.

	Before treatment (Nov./52) 20.2 l.	After treatment (March/55) 32 l.	Predicted 189 l.
Maximum breathing capacity			
LUNG VOLUME			
Total capacity (T.C.)	4.68 l.	4.79	5.14
Vital capacity.....	1.09 l.	2.03	4.12
Functional residual capacity.....	3.95 l.	3.57	1.86
Expiratory reserve...	0.36 l.	0.81	0.84
Residual capacity (R.C.).....	3.59 l.	2.76	1.02
R.C./T.C.%.....	76.7%	57.6%	20.0%
ALLERGIC REACTIONS			
Dust.....	++++	5 types of fish.....	++
Feathers.....	++++	Lima beans.....	++
Ragweed.....	++++	Peanuts.....	++
Cat's ep.....	++++	Apples.....	++
5 types of trees	++++	Corn starch.....	++
Pyrethrum....	++++		

TABLE II.

ARTERIAL BLOOD STUDIES (AT REST)			
	Breathing room air		
	Before treatment	After treatment	Breathing O <sub>2</sub> 17.2 %
Min. vent. in l. at 37° C.....	6.29	7.80	7.57
Min. vent. in l. (S.T.P.D.)...	5.23	6.5	6.3
O <sub>2</sub> consumption (c.c./min.)...	155.6	200.0	178.0
CO <sub>2</sub> production (c.c./min.)...	140.6	164.0	157.0
Resp. quotient.....	0.90	0.87	0.89
O <sub>2</sub> V l. for 1 l. of O <sub>2</sub> .....	40.4	37.3	42.5
CO <sub>2</sub> content (vol. %).....	60.53	56.11	53.97
O <sub>2</sub> content (vol. %).....	17.70	19.13	18.16
O <sub>2</sub> capacity (vol. %).....	20.31	20.34	20.34
Hb O <sub>2</sub> saturation (%).....	87.1	94.0	89.0
pCO <sub>2</sub> (mm. Hg).....	56.0	40.0	38.0
pO <sub>2</sub> (mm. Hg).....	60.0	72.0	58.0
pH.....	7.37	7.48	7.51
Alveolar pO <sub>2</sub> (mm. Hg).....	94.0	97.0	81.0
Alveolar air gradient (mm. Hg).....	34.0	25.0	23.3
Dead space/total air (%)....	37.1	31.3	27.1

TABLE III.

ARTERIAL BLOOD STUDIES (DURING EXERCISE)		
	Before treatment	After treatment
Min. vent. 37° (l.).....	18.3	20.7
Min. vent. (S.T.P.D.).....	15.2	17.1
O <sub>2</sub> consumption.....	540.0	616.0
CO <sub>2</sub> production.....	454.0	435.0
Resp. quotient.....	0.84	0.71
O <sub>2</sub> V.....	33.4	33.5
CO <sub>2</sub> content.....	56.46	51.13
O <sub>2</sub> content.....	18.35	20.40
O <sub>2</sub> capacity.....	21.17	21.76
Hb O <sub>2</sub> sat. (%).....	86.7	93.7
pCO <sub>2</sub> .....	49.5	46.0
pO <sub>2</sub> .....	62.0	69.0
pH.....	7.30	7.41
Alveolar air pO <sub>2</sub> .....	89.0	84.0
Alveolar air gradient.....	27.0	15.0
Dead space (%).....	36.6	41.0

attacks helped lung relaxation and in this manner at least assisted in the treatment of the tuberculosis.

When pulmonary tuberculosis is complicated by asthma, we always make a complete clinical investigation of the cause and start treatment with bronchodilators, antihistaminics, desensitization, antibiotics and psychotherapy if necessary. If we cannot stop attacks with this medication, as in the three cases mentioned above, we add ACTH in doses of between 10 and 20 units a day at the beginning and diminish the dose afterwards. We have had no reactivation, even in cases given it for more than a year, but administration was always covered by antibiotics. Many patients have also been given the same doses of ACTH for a few weeks or days to help to stop an acute attack or a drug sensitivity, without side-effects.

We do not use cortisone because of the danger of atrophy of the adrenals and the difficulty of controlling the attacks. We have found it necessary to increase the dosage of cortisone in many instances, instead of decreasing it with prolonged treatment, thus running the risk of side-effects almost never encountered with ACTH in small doses.

It is suggested that isoniazid be given to asthmatics who are tuberculin-positive and have to take ACTH for months or years.

The case presented also demonstrates that right heart decompensation is not an absolute contraindication to the use of ACTH when it is given to overcome the barrier in the lungs, the cause of cor pulmonale.

It must be emphasized, however, that in such cases we must be very careful to remove salt from the diet, give diuretics, potassium salts, and digitalis and provide antibiotic cover. From this study it would appear that ACTH can be safely used in small doses for treatment of intractable asthma complicated by active tuberculosis, if covered with antibiotics.

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## A FATALITY ASSOCIATED WITH CHLORPROMAZINE (LARGACTIL) THERAPY

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CURRENT psychiatric literature seems to be giving more space to organic and psychological studies of psychiatric syndromes, and concurrent with this trend there seems to be an emphasis on organic methods of treatment as opposed to purely psychological methods. New drugs, of which chlorpromazine is probably the best known, have come into prominence in the field of psychiatry during the past few years.

Publicity given to these drugs in lay, semi-scientific, and scientific releases have made them household words, so that the amateur psychiatrist is as familiar with their source, dosage, method and site of action as he was a few years ago with such phrases as "Oedipus complex", "subconscious", "frustrations", and other analytical terms, and probably dispenses his knowledge just as expertly.

However, a real danger exists, since so many people have now been exposed to psychiatric literature and are so anxious to be "cured" of every manifestation of "nervousness", that they may go to their family doctor seeking some "magic" formula for their ills, or for tranquillity while they get insight into their problems. The busy practitioner, too, whose office is filled with a high percentage of people showing psychiatric syndromes or illnesses with "functional overlay", may all too readily give in to the whims of his patients. Having patiently awaited some such "magic" formula himself, he is all too ready to prescribe these drugs to his willing patients.

It is obvious then that, as newer drugs come into existence and as they become publicized, they will be dispensed with more frequency, by more doctors to more people. Although the toxicity of chlorpromazine has been written up in the journals, death has been a rare complication indeed. It is obvious too that, as more people use this drug, eventually patients will be found who react to it in such a way that death is the outcome. The following case is one in point, and is a fatality associated with the use of chlorpromazine.

M.B., a 38-year-old, white, single woman was admitted to Falconwood Hospital as a certified patient on July 7, 1951. There was a history of electro-convulsive therapy in the fall of 1950 for the treatment of catatonic schizophrenia. This form of treatment had caused a remission of her symptoms, and she had carried on until a few weeks before admission.

It was felt that E.C.T. was again indicated, and she had a series of seven treatments with no complications. She was discharged in August 1951, once again with a remission of symptoms.

The sudden death of her father shortly after her discharge upset the patient, but she managed to carry on outside of hospital until she had to be readmitted in March 1952. On this occasion she was in hospital until June of the same year. She was again returned in August and discharged in November. On both readmissions she had a course of E.C.T. and responded favourably to this type of therapy, although it was obvious that she could not remain well for any length of time.

This woman managed to stay out of hospital until January 1953, when she was again readmitted as a certified patient. The diagnosis of schizophrenia was still felt to be the correct one. However, the symptomatology was such that it was felt she fitted into the paranoid classification. Electro-convulsive therapy was again started, but she remained hostile and suspicious, and her delusional system appeared to be more marked. She was presented at staff conference, and the possibility of a prefrontal lobotomy was discussed. It was suggested that she might be tried on chlorpromazine, and this form of therapy was instituted on June 17, 1954. She was accordingly started on 300 mg. (12 tablets) daily. There was no other medication.

On this medication her mental state improved remarkably. Whereas previously she had been hostile and suspicious, and had some ideas of persecution, she became more friendly, co-operative, and helpful about the ward. There was also a remarkable change in this woman's attitude towards clothes. In the past she had always worn slacks and blue jeans, but she now wore dresses, used make-up, and in general showed a more feminine outlook in her attention to her appearance.

On July 2, 1954, the patient complained of a sore throat. Examination revealed an infected pharynx, and a penicillin-streptomycin combination was started. Her temperature, which had been 103.8° F., dropped to 100.4° the next day. Two days later it was up again to 104.2°. Medication was discontinued and aureomycin begun. The blood picture showed a white count of 450 and a throat smear showed coliform bacilli. She was transferred to the Charlottetown Hospital on July 28 for treatment of agranulocytosis.

On admission her temperature was 103.2° F., pulse 136, respirations 24. Investigation revealed a white cell count of 1,000, platelet count of 85,000, bleeding time of 6 minutes, erythrocyte count of 4,150,000, and a haemoglobin value of 80%. The report on the smear was: "Cells were so few it is impossible to make a per cent count. All the cells noted were lymphocytes." Total serum proteins 5.7, albumin 3.6, globulin 3.1 g. %. Bone marrow puncture revealed no marrow granulocytes. The icteric index was 30, and three days later 170. Van den Bergh direct reaction was +++, cephalin flocculation +++, thymol turbidity ++. Prothrombin time was 32 seconds. Urinalysis showed albumin +++++, occasional white cells, a few red cells, an occasional cast, and a positive reaction for bile.

She was given 1,000 c.c. of whole blood, 250 mg. aureomycin 6 hourly, and aureomycin lozenges. She also had 100 mg. cortisone orally for one day.

Her white cell count was repeated daily, and a few days after admission had dropped to 600.

Her condition seemed to deteriorate, she became more jaundiced, and her abdomen became distended. She died on August 2, five days after admission to the General

Hospital and just 10 days after the first symptom, a sore throat, became apparent. Unfortunately a post-mortem examination was not obtained.

#### SUMMARY

A fatal case of agranulocytosis associated with chlorpromazine is presented. Although this complication is rare, it must be borne in mind. Patients on chlorpromazine should have frequent white cell counts.

My thanks are extended to Dr. J. A. MacMillan and the Charlottetown Hospital for use of their records, also to Dr. A. A. MacVicar of the Falconwood staff for his help in the management of this patient.

Falconwood Hospital.

#### SEVERE HÆMOLYTIC REACTION FOLLOWING THE INTRAVENOUS ADMINISTRATION OF EMULSIFIED VITAMIN K<sub>1</sub> (Mephyton)\*

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THROMBOSIS IN ARTERIES or veins constitutes one of the greatest medical problems of the present day. There are available a number of potent oral anticoagulant drugs which, by reducing prothrombin activity, successfully prevent it. Use of these drugs is widespread, and seems likely to increase. Unfortunately, their administration may lead to severe or even fatal hæmorrhage. Although careful control of treatment by repeated estimation of the blood prothrombin level reduces this risk, under certain circumstances undesirable bleeding may occur.

With the exception of heparin, the commonly used anticoagulants exert their effect by inducing "hypoprothrombinæmia". Two measures are recommended to reverse this effect: the administration of preparations possessing vitamin K activity and the transfusion of blood. The latter is not always available and has some disadvantages, so that increasing reliance has been placed on the vitamin K substances. It is generally agreed that vitamin K<sub>1</sub><sup>1-3</sup> and vitamin K<sub>1</sub> oxide<sup>4</sup> are the only members of the group which act rapidly and effectively enough to deal with

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the emergency of hæmorrhage. An emulsified vitamin K<sub>1</sub> preparation, marketed as Mephyton (Merck), is commercially available and several reports<sup>5-7</sup> emphasize its effectiveness. It is also stated that no serious toxic reactions have been reported and a search of the literature fails to disclose any account of significant untoward effects. It is therefore considered desirable to describe a severe reaction observed to follow administration of Mephyton.

which was 32%. When next determined on April 15, 1953, it had fallen to 15% of normal, but because of an error this report failed to reach the physician. On April 19, 1953, the patient developed pain in the lower abdomen and next day noted hæmaturia. Dicoumarol was discontinued and he was readmitted to hospital on April 21, 1953. His general condition was satisfactory and his blood pressure was 190/120. Sixty mg. of an aqueous vitamin K preparation (Kavitan) was given intravenously but pain and hæmaturia continued, and ecchymoses developed over the surface of the abdomen. The following morning (April 22, 1953), prothrombin time was less than 10% of normal, hæmoglobin value was 84% (13.1 g.), white cell count was 11,300, and

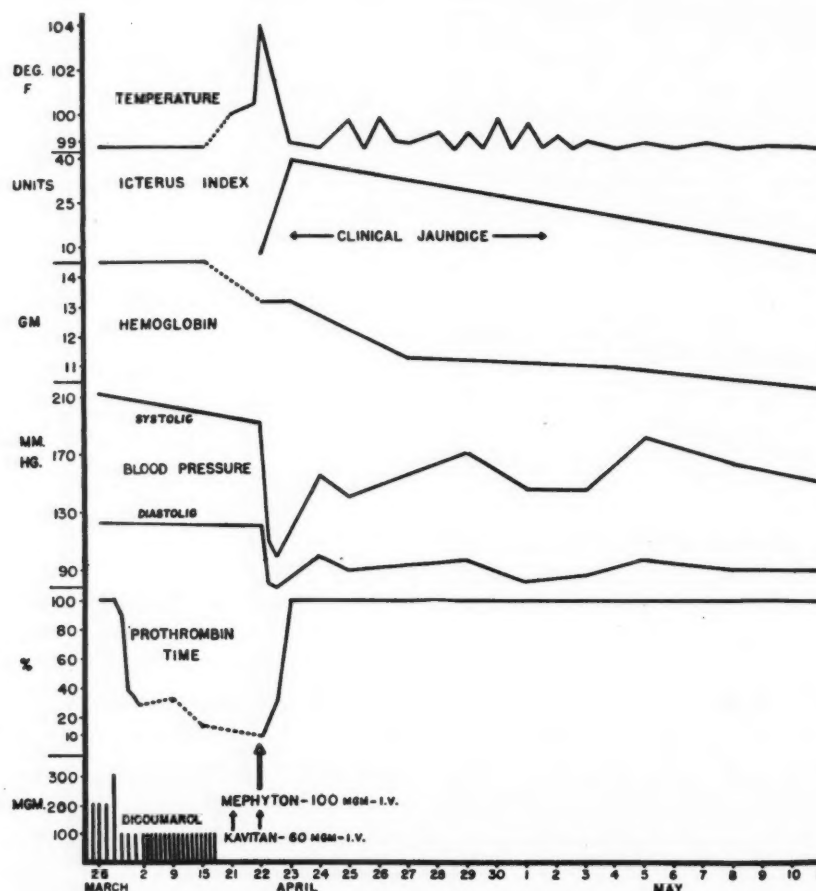


Fig. 1.—Severe hæmolytic reaction following intravenous administration of emulsified vitamin K<sub>1</sub> (Mephyton). Patient was in hospital March 26–April 2, and readmitted from April 21 to May 16, 1953.

A 46-year-old hypertensive white male was treated in the Winnipeg General Hospital from December 17, 1952, to January 17, 1953, for a typical myocardial infarction. Phenylindanedione (Danilone) was given and the one-stage (Quick) prothrombin time was kept within the therapeutic range. Since there was no recurrence of pain and good recovery occurred, the anticoagulant was discontinued at the time of discharge. About a week later mild cardiac pain occurred at rest. This pain was easily controlled with nitroglycerin until mid-March 1953, when it increased. It was felt that another infarction was impending and he was readmitted on March 26, 1953, for resumption of anticoagulant therapy. On this admission dicoumarol was given and the prothrombin time fell to therapeutic levels by the fourth day. When the prothrombin time had been stabilized at 28–30% of normal (30–28 seconds) and the pain had gone, he was sent home (April 2, 1953) on a maintenance dose of 100 mg. daily. He felt well and reported to the laboratory a week later (April 9) for determination of a prothrombin time,

icterus index was 8 units. It was decided to administer Mephyton to raise the prothrombin time to a safe level.

At 11.00 a.m. 100 mg. of Mephyton mixed with 10 c.c. of distilled water (ampoule water for injection) was administered intravenously slowly over a 10-minute period. Within 10 minutes of completion of the injection, the patient had a rigor lasting 20 minutes; temperature rose to 104° F. and blood pressure fell to 125/80. These effects are shown graphically in Fig. 1. As he now had bleeding from several needle puncture sites and fresh ecchymoses had appeared over the shoulders and arms, another 60 mg. of Kavitan was given intravenously without reaction. By 3.00 p.m. the prothrombin time was up to 30%, but blood pressure remained low (120/75) and he now complained of severe retrosternal pain. It was feared that another cardiac infarction was occurring but serial electrocardiograms did not confirm this.

The day following this reaction, troublesome hiccups occurred and persisted for 12 days. The urine was noted

to be brown, and jaundice was obvious soon after. The white cell count rose to 21,600. As shown in Fig. 1, icterus index reached 40 units and then gradually fell; hæmoglobin value steadily declined to 67% (10.4 g.). Tests of liver function (cephalin flocculation, thymol turbidity and thymol flocculation) performed on April 29, 1953, were negative. Blood pressure remained around 155/95 for some months before regaining its usual level. Because of the rigor, rapid development of jaundice and anæmia, leukocytosis, and the brown urine, it was concluded that this was a hæmolytic reaction. Unfortunately, urobilinogen estimations and reticulocyte counts were not performed.

On May 11, 1953, when jaundice had disappeared, an attempt was made to reproduce a hæmolytic or agglutination reaction *in vitro*, using oxalated blood from the patient and from a control donor. It was calculated that the patient had received 1/40 mg. of Mephyton per c.c. body blood. A fraction of a c.c. of saline Mephyton solution containing 1/80, 1/40 and 1/20 mg. respectively was added to tubes containing 1 c.c. of whole blood. No red cell agglutination or hæmolysis occurred at room or at body temperature. Tubes were prepared with 1 c.c. solution of Mephyton in normal saline containing 1/80, 1/40, 1/20, 1/10, 1/4 and 1/2 mg. per c.c. To these tubes were added a drop of whole blood, and again no reaction occurred in patient or control blood at room temperature. However, since these tests do not duplicate the original conditions of administration, their significance is doubtful. A red cell fragility test was normal, and a Coombs test was negative.

After discharge from hospital on May 16, 1953, the patient remained in reasonably good health and hæmoglobin and blood pressure returned to the levels present before the reaction. Occasional cardiac pain occurred and finally in September 1954 a second acute myocardial infarction developed. He was again treated with Danilone for five weeks in hospital. Since then he has been maintained on this anticoagulant as an outpatient, without mishap.

#### DISCUSSION

There are many reports of toxic reactions to anticoagulants but this would appear to be the first instance of a reaction to the antidote. The only hazard of potent vitamin K<sub>1</sub> compounds previously mentioned in clinical literature is the suggestion of Miller *et al.*<sup>3</sup> that in escaping serious hæmorrhage the patient may again be placed in danger of thrombosis or embolism. The patient here reported had never reacted unfavourably to any drug previously, and the succession of events makes it appear likely that the observed reaction was due to the Mephyton. An intracutaneous injection of Mephyton a year later gave a positive skin reaction only after an interval of two weeks.

The main features of the reaction as shown in Fig. 1 were rigor, anæmia, jaundice, fall in blood pressure and, in addition, passage of brown urine. With these in mind, it is interesting to review experimental work on the toxicity of vitamin K<sub>1</sub> (2-methyl-3-phytyl-1: 4-naphthoquinone).

Molitor and Robinson<sup>8</sup> studied the acute and chronic toxic effects of vitamin K<sub>1</sub>, phthiocol and

2-methyl-1: 4-naphthoquinone in mice, rats and chicks. Vitamin K<sub>1</sub> was found to be much less toxic than the other two. In rats fed these substances over a period of 30 days, a marked fall in erythrocyte count and hæmoglobin level occurred with phthiocol and 2-methyl-1: 4-naphthoquinone, but not with vitamin K<sub>1</sub>.

Shimkin<sup>9</sup> studied the toxicity of naphthoquinones with vitamin K activity in mice. He stated that the manifestations of toxicity of all the compounds were practically identical: it is noted, however, that none of the mice died from intravenous injection of vitamin K<sub>1</sub> and the author comments, "The low toxicity of K<sub>1</sub> was undoubtedly associated with its slow rate of absorption." With toxic doses, death was due to respiratory failure. It is stated that in several instances the urine became brown in colour. At necropsy there was marked vascular congestion of organs, sufficient to cause hæmorrhagic extravasation in the renal tubules and in the liver.

Ansbacher, Corwin and Thomas<sup>10</sup> in an extensive study of toxicity of menadione (vitamin K<sub>1</sub> is phytyl-menadione), menadiol and esters in various animals, including rabbits, cats, dogs and monkeys, also found vitamin K<sub>1</sub> to be of low toxicity. However, with the more toxic substances, fall in blood pressure, anæmia, and dark brown urine were observed. They concluded that the manifestations of chronic toxicity resulting from this group are the result of injury to the circulating red cells and not to the hæmatopoietic or other systems.

Allison<sup>11</sup> has recently observed a small series of cases of kernicterus and hæmolytic anæmia in premature infants whose only treatment had been relatively high doses of water-soluble vitamin K analogue (Synkavit) given for hæmorrhagic disease. None of the patients showed evidence of Rh incompatibility. He subsequently found that administration of various water-soluble vitamin K analogues in high concentrations to rats could result in hæmolysis.

It is apparent that the toxic effects as observed in animal experiments bear a resemblance to the reaction in the patient here reported. In the laboratory, less toxicity follows oral administration of the compounds. Since Gamble *et al.*<sup>6</sup> have found that "in most cases vitamin K<sub>1</sub> in doses as low as 1 to 5 mg. orally has been observed to produce as satisfactory a response, in as short a time as four hours, as the large intravenous doses generally recommended", it would ap-

pear preferable to reserve the intravenous route for emergencies.

#### CONCLUSION

Although Mephyton is undoubtedly an effective antidote for excessive hypoprothrombinæmia induced by oral anticoagulants, it may not be as free of toxicity as has been thought. A severe reaction following its intravenous administration has been observed; similar manifestations have occurred in experimental animals receiving toxic doses of related compounds. There is evidence that Mephyton is usually as effective orally as it is intravenously and it is suggested that the use of the oral route may avoid an occasional toxic reaction of the type here described.

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## Clinical and Laboratory Notes

### CLOSURE OF LACERATIONS

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THIS IS A REPORT of a new technique for closure of wounds, both operative and lacerated. A polyester film coated with a non-toxic glue is used to coapt skin edges without the necessity for skin sutures.

Utilizing this process, healing time has been shortened by an average of 24 hours, final scars have been much improved in appearance, and in small lacerations the pain of closure has been much reduced. Because of this pain reduction the technique is particularly suitable for use in closing lacerations in children.

The tape used looks much like the ordinary Scotch tape which can be purchased in any drug store. Instead of cellophane the wound tape is made from a polyester film which is slightly elastic. This ability to stretch in all directions allows some movement of the involved area while maintaining good coaption of wound edges.

At intervals the tape is perforated so that air may reach the wound and so that wound secretions have free egress. The adhesive with which one side of the tape is coated has been specially prepared for adherence to skin as well as for lack of toxicity and antigenicity. It has been in use for several years on other products without reported reaction.

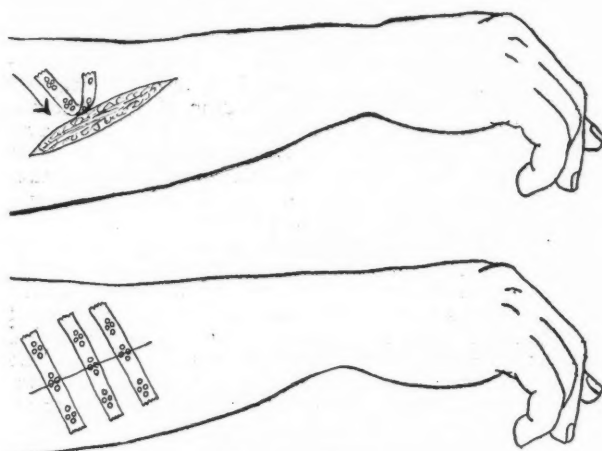


Fig. 1.—Above.  
Fig. 2.—Below.

In our work, small lacerations have been closed as follows: The wound is first washed with castile soap and water and then irrigated copiously with sterile physiological saline solution. We feel that no antiseptic of any kind should be applied to the wound or to surrounding skin surfaces. Thorough scrubbing with soap and water provides more adequate bacteriostasis and does not damage tissue cells to so great an extent as many commercial antiseptics.

Foreign particles are picked from the wound with splinter forceps. Any that cling tenaciously are brushed away with an artist's paint brush made of camel's hair. If the laceration is deep enough to require closure of fascia, an anæsthetic solution is injected along the cut fascial edges. Otherwise, no anæsthetic is required, because use of the tape is painless.

Fascia is closed with interrupted stitches, using plain cotton sewing thread as suture material. Particular attention is paid to not tying these stitches so tightly that fascia is pulled together in a crumpled mass at the site of each stitch.

Skin edges are then coapted using the polyester tape. Since the adhesive is pressure-sensitive, i.e., will stick only when firmly pressed to the skin surface, it must be applied

and then pressed against the skin by running a finger along the tape while exerting minor pressure. We apply the tape to the most mobile edge of the wound first (Fig. 1) then pull skin edges into position (Fig. 2).

The adhesive has been adjusted so that it will loosen and drop off in approximately five days. It can be changed so that it will adhere

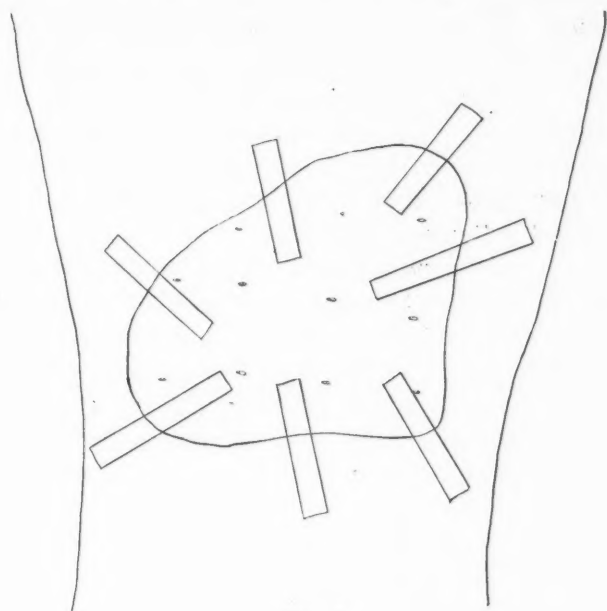


Fig. 3

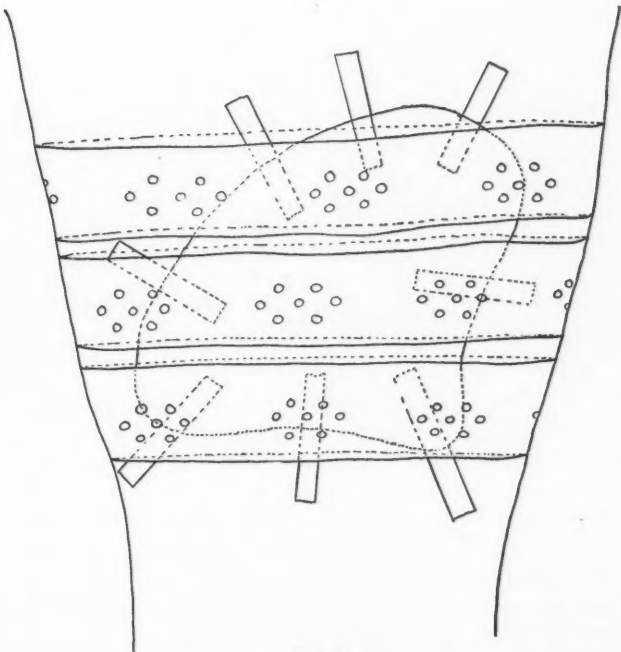


Fig. 4

for longer or shorter periods but the wounds we have seen are usually relatively firm in that time.

Sutures act as foreign bodies which delay the healing process. In a series of several hundred wounds we have had opportunity to compare clinically the healing time of taped and sutured

wounds. It is our impression that taped wounds are firmly healed about 24 hours sooner.

We now have a final estimation on nearly 100 wounds, with clinical opinions as to scarring. Results are based solely upon experimental evaluation. Statistical comparison is impossible because we do not have identical wounds. After use of the tape, we believe that the scar looks about 50% better than scars of approximately similar wounds after suturing. In most cases there exists only a hairline of visible scar tissue, and there is none of the crosshatch scarring so often seen with sutures.

There is now an unbroken series of over 200 cases without an infection. We believe that use of the tape, along with meticulous cleansing, will result in a major improvement in infection rate. There is, of course, no way to say whether the tape or the exacting technique is more important in achieving this.

Certainly the tape is not without advantage from the aspect of infection. Sutures are traumatizing and the course of the suture in the tissues provides an excellent area for entrance of bacteria. The tape avoids this entirely.

Tape has been particularly satisfactory when used to hold small skin grafts in place. The edges of the graft are first fastened in position with slivers of tape (Fig. 3), and then the surface is covered with strips of full width tape (Fig. 4).

Since the tape separates spontaneously about the fifth day, it is sometimes necessary to apply it a second time to be certain that the graft is given a proper chance to adhere.

The tape is available to qualified physicians in small quantities for research purposes only. Any physician who cares to try it and will report in the literature the results of his experiments may obtain samples by writing the author.

8124 Princess Jeanne, N.E.

#### A NEW HYPNOTIC

A new non-barbiturate hypnotic, alpha-phenyl-alpha-ethyl-glutarimide, was first described in Switzerland last year. A comparative test of its properties has been made in a German clinic; 349 patients received either a barbiturate or the new hypnotic during tests lasting several months. The average dose was 0.25 to 0.5 g. half an hour before sleep. Tolerance was always good and most patients slept for six to seven hours. There was no hangover or habituation. The agent appeared to be somewhat more effective than barbiturates.—*Deutsche med. Wchnschr.*, 80: 1654, 1955.

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### PROTOPHRENIA

Does a bad environment in the first year or two of life ever lead to mental deficiency? If so, is there a particular pattern of defect produced? If so, is the incidence in a civilized community sufficiently high to warrant intensive study of the situation? These were the questions which Dr. Harold Bourne attempted to answer in a study of mentally defective children admitted to the Fountain Hospital, London, England (*Lancet*, 2: 1156, 1955). This hospital has 600 beds for mentally defective children, almost all of whom are under five years old on admission and therefore provided suitable material for such a study. Dr. Bourne investigated 154 cases admitted consecutively during a period of two years and divided them into two groups—those with discernible organic cause for their mental retardation and those without. He compared statistically the socio-psychological background and the behaviour of children in the two groups. Only children with an intelligence quotient of 50 or under were included.

Of the 154 cases, 138 had an evident organic cause and 16 had none. There was no significant difference between the two groups as regards defective intelligence in their families. Abnormalities of pregnancy, labour and the neonatal period were found only in the "organic" group. Family size did not differ, and the economic levels in the two groups were also similar. On the other hand, there was a remarkable difference in the incidence of what the author describes as "pathological mothering" and "pathological fathering". The author distinguishes between qualitative and quantitative mothering; in the qualitative type the mother or mother-substitute is very abnormal psychologically or

known to local social agencies as notoriously psychopathic or as a dullard, neglectful of her children. In quantitative pathological mothering, the infant is without a mother or definite mother-substitute for an unduly long time. Whereas only 3% of the "organic" group had experienced both qualitative and quantitative mothering, 36% of the other group had had such experience. The differences as regards pathological fathering were not so marked. Other adverse environmental factors such as illegitimacy, marital conflict between the parents or a history of suicide, alcoholism and crime in the family were also greatly preponderant in the residual group.

The author examines various possible fallacies in his study and then concludes quite definitely that the mentally defectives without obvious organic cause had a remarkable preponderance of destructive social influence operating upon them. He further shows that these children present a very uniform clinical picture. Their intelligence quotients tend to be clustered round a mean of about 40 and they commonly show behaviour disorders.

For this condition of environmentally induced mental deficiency the author suggests the term "photophrenia", which he regards as a psychogenic failure of ego formation. He rightly points out that this condition is of great social interest since it cannot be rare, is probably preventable and may initially be treatable and reversible.

### Editorial Comments

#### ASSESSMENT OF NUTRITIONAL STATE

It is interesting and instructive to return to the classical study of Paton and Findlay<sup>10</sup> on children in Scotland for a definition of nutrition as understood after the First World War. We quote from this monograph: "Nutrition does not refer to the height of a child, to the state of his health or to his muscular activity. . . . Nutrition simply refers to the manner in which an individual absorbs and assimilates his food, in short, increases his bulk." These workers regarded nutrition mainly in terms of increase in weight. Most paediatricians today would not subscribe to such a rather narrow view of the subject, but the remnants of this attitude still remain. A case in point is the recent work of B. S. Eppright<sup>3</sup> and her co-workers in Iowa, who studied about 1,200 students between the ages of 6 and 18. Dietary records were obtained,

a number of physical measurements were taken, and blood samples were analyzed for hæmoglobin, alkaline phosphatase, ascorbic acid and carotenoids. But the children did not receive a comprehensive examination by physicians. It may be argued that they were probably perfectly healthy, but there is no proof of such a situation. They were from a well-fed group and the main yield in information from this type of study is confirmation that plasma carotenoids and ascorbic acid are related to intake. Should this type of study be undertaken in those parts of the world where people are on marginal diets, and where there is also a great deal of disease present due to other causes, completely erroneous conclusions could be drawn from the growth studies and biochemical determinations in question.

As has been pointed out (Gordon and leRiche<sup>4</sup>), field studies in nutrition were initially mainly concerned with dietary surveys. The identification of specific nutrients and the better definition of nutritional disease entities led to a second phase in field activities in which the chief concern was with the prevalence of individual dietary deficiencies and of specific nutritional disorders. Laboratory tests were incorporated into field practice, and clinical methods attained a new level of importance. Here we may mention the well-known nutrition surveys in Newfoundland (Adamson *et al.*,<sup>1</sup> Aykroyd *et al.*<sup>2</sup>) and the study by Pett and Hanley<sup>11</sup> on schoolchildren in British Columbia and Saskatchewan.

A third phase in the direction of field interests is the broadening of the nutrition study and use of it as the foundation for a general health survey. The concern is less with nutritional disorders and more with the part they have in determining the character and behaviour of other mass disease. The modern need is, therefore, for complete medical and biochemical studies, especially on marginal groups. Such studies must of necessity be limited to rather small numbers, in view of the work involved. A project of this type is that recently undertaken by Jelliffe<sup>6</sup> and co-workers in Jamaica.

A fourth and most difficult phase in nutritional studies on humans may be added. It is the controlled dietary experiment. As an example of this, we may mention the fine study of Widdowson and McCance<sup>13</sup> on orphanage children in Germany after the last war. The startling results from these experiments are that children can grow well on diets which hitherto have been considered to be inadequate. "Thus it has been shown that diets in which 75% of the calories were derived from wheat flour and 21% from vegetables and which contained only 8 g. of animal protein per day, provided undernourished children aged 5-15 years with all of the nutrients required for a high rate of growth and development for a period of 18 months."

An additional experiment on the German children was organized, in which the experimental group received 500 ml. of milk additional to 60-120 ml. issued daily to both groups. After six months the children receiving the extra milk were no different clinically or in terms of height and weight. We cannot resist the suggestion that a high consumption of whole milk, currently advocated in North America, might not really be so necessary for health, especially in view of the fact that some relationship appears to exist between high animal-fat consumption and atherosclerosis and coronary artery disease. The South African Bantu on a low fat diet have a lower prevalence of atherosclerosis than whites on a more liberal diet (Walker and Arvidsson,<sup>12</sup> Higginson and Pepler<sup>5</sup>).

The Diepkloof experiment on Bantu boys (leRiche *et al.*,<sup>7,8</sup> Ockerse *et al.*<sup>9</sup>) in which the experimental group had only 4.1 g. of animal protein, less fat than the German children in the above experiment, and also less calcium and carotenoids, seemed to show that the lower dietary limits compatible with good health had been approached. These boys grew as well as those on the good standard diet, but they had somewhat more skin signs of malnutrition at the end of the experiment. They experienced the same number of minor illnesses, but remained ill for a longer time than those on the good diet. But the largest complicating factor amongst the Bantu boys was the high proportion of them who had pre-existing liver damage shown by a number of biochemical tests. It is probable that children with liver damage need more of certain nutrients, such as protein and the carotenoids, than those with healthy livers. The Diepkloof work is, therefore, suggestive, but not crucial in view of the complications introduced by pre-existing disease. What is illustrated is the need for a holistic approach in nutritional studies. As a matter of interest, it may be mentioned that the Bantu boys put up an excellent performance in the Harvard Step Test of physical efficiency, better than a group of well-fed American boys. The Bantu on the less adequate diet performed as well as those on the good standard diet.

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## PHŒOCHROMOCYTOMA: A REVIEW

In spite of a great deal of investigative work, the etiology of most cases of hypertension remains obscure and the therapy inadequate. There is one small group of patients, however, who may have a clinical picture indistinguishable from that of benign or rarely malignant hypertension, but who can be relieved completely of their elevation of blood pressure by the removal of a phæochromocytoma. Recent advances have led to an increased interest in the detection and therapy of such catechol-secreting tumours.

Functioning tumours of chromaffin tissue may arise in the adrenal medulla or in any of the sympathetic ganglia. The great majority are benign. Multiple tumours occur in close to 16% of cases.

It is important to appreciate that the characteristic "adrenal sympathetic crises" with their paroxysms of hypertension are often absent, and that sustained blood pressure elevations are observed in about 2/3 of patients afflicted with these tumours. In the cases in which the ratio of epinephrine to norepinephrine secreted is high, symptoms and signs of hypermetabolism may be noted with heat intolerance, weight loss, increased appetite, slight temperature elevation and sometimes polydipsia, polyuria and glycosuria. Here a diagnosis of thyrotoxicosis may be considered, but of course the thyroidal radioactive iodine uptake and serum-protein-bound iodine values are normal. Diabetes mellitus too may be suspected as the primary etiological factor. Usually, however, the predominant secretion is norepinephrine and this causes a striking rise in systolic and diastolic blood pressures but no appreciable metabolic changes.

There are several pharmacological agents which may help in establishing a diagnosis, either by inducing paroxysms of hypertension when the blood pressure values are normal, or by causing a marked blood pressure fall when initial levels are high. Of the former group of agents, histamine and Mecholyl are best known. The disadvantages of using these "provocative" substances are the dangerous paroxysms of hypertension which are sometimes precipitated and the relative frequency of false positive and false negative results. Of the adrenergic blocking agents, Dibenamine, piperoxane (benzodioxane) and phentolamine (Regitine, Rogitine) have been most popular. Dibenamine is a longer-acting, less reliable preparation whose use is no longer recommended. Though false negative and false positive results occur in a small number of cases in which piperoxane is employed, it is of established value as a diagnostic testing agent. Its chief disadvantage is the occurrence of annoying and sometimes serious side reactions. On the other hand phentolamine has proved to be a safe effective adrenolytic agent which gives few false positive and extremely rare false nega-

tive tests. It is free from disturbing side reactions and serves as a good screening test suitable for office use. It must be remembered, however, that significant blood pressure falls may occur in any patient receiving barbiturates and that administration of these should be stopped at least 48 hours before the phentolamine is given.

Goldenberg and Von Euler<sup>1</sup> are strong in their belief that the only completely reliable test for the presence of phæochromocytoma is a measure of the urinary excretion of catecholamines (epinephrine and norepinephrine). This may be carried out, utilizing either biological or chemical techniques. They have found the urinary catechol levels to be elevated invariably in the presence of a functioning chromaffin tumour. Unfortunately, the methods employed are difficult technically. Recently Moulton and Wiloughby<sup>3</sup> described a modified, simplified biological procedure to be used as a rapid screening test in large clinics. They measured the effect of untreated urine on cats' blood pressure. Weil-Malherbe and Bone described a complex method of measuring blood epinephrine and norepinephrine levels, but this is far too difficult for routine use.

X-rays may be of help when a tumour is strongly suspected. The presacral insufflation of air or oxygen sometimes clearly outlines an adrenal medullary lesion. However, a small but real risk of air embolism is present, and difficulties in interpretation exist even in the most experienced hands.

The surgical removal of a phæochromocytoma is a hazardous procedure. Manipulation of the tumour causes the release of epinephrine and norepinephrine and may precipitate dangerous paroxysms of hypertension. Also, once the vessels to the tumour are clamped, a precipitous fall in blood pressure usually occurs. It is now possible, however, to maintain the blood pressure close to normal by the judicious intravenous use of phentolamine and norepinephrine. These are placed in separate intravenous bottles, clamped off, but directed to flow into the tubing of a steadily flowing intravenous preparation. During the period in which the tumour is being handled, phentolamine is administered as required to stabilize the blood pressure. After the vessels to the tumour are clamped, the phentolamine infusion is stopped and norepinephrine is allowed to flow in as it is needed for continued maintenance of a satisfactory blood pressure level. Gradually, the rate of infusion is slowed and finally it is stopped. The results of surgery are extremely good except in a very few of the patients suffering from prolonged severe hypertension when irreversible changes may have occurred.

Thus, by constant awareness of the possibility of the existence of a phæochromocytoma, by judicious use of the screening techniques available, and by carefully controlled surgery, a small

but significant number of hypertensive patients may be cured of their disease. R.H.S.

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#### NEW ANTIBIOTICS

**Penicillin V.**—During 1953 and 1954 a series of studies appeared in the Austrian medical literature on a new type of penicillin with an excellent effect when administered orally. This work has been followed up by staff members of the Mayo Clinic who have recently published two papers on this new type of penicillin (*Proc. Staff Meet., Mayo Clin.*, 30: 467 and 521, 1955). Penicillin V is produced biosynthetically by *Penicillium chrysogenum* Q 176 in a culture medium containing a special type of nutrient substrate. It has been used mostly as the crystalline penicillin V acid, which passes through the stomach unchanged, is stable and is suitable for oral administration. It has been shown that the levels of penicillin V in the blood after oral administration exceed those of buffered sodium penicillin G and unbuffered potassium penicillin G. Against *Micrococcus pyogenes*, penicillin V is more active than penicillin G, and there is cross resistance, strains resistant to G being also resistant to V.

Penicillin V tends to maintain its level in the serum for longer than penicillin G; its serum concentration usually begins to decline four hours after administration. For infections of moderate severity, 400,000 units given every four hours appears sufficient, though 800,000 units has been used for fairly severe infections. Results in a preliminary series of 30 cases (abscesses, cholecystitis, cystitis, pharyngitis, pneumonia, etc.) were encouraging. Only one troublesome side-reaction has been at all common—mild gastrointestinal irritation. When penicillin V was given with probenecid, higher levels in the serum were attained. This penicillin also appears to diffuse fairly readily into most body fluids and tissue, with the exception of the cerebrospinal fluid.

**Streptonivicin (Albamycin).**—The same group of workers from the Mayo Clinic (Martin *et al.*, *Proc. Staff Meet., Mayo Clin.*, 30: 540, 1955) have also given a preliminary report on streptonivicin, a new antibiotic produced by an actinomycete, *Streptomyces niveus*. This antibiotic is said to be active against many Gram-positive and some Gram-negative bacteria. It shows particularly high activity *in vitro* and *in vivo* against *Micrococcus pyogenes*. It is relatively stable and cross resistance between it and other antibiotics does not occur, though *Micrococcus*

*pyogenes* may develop resistance fairly readily to the new drug. Serum had a considerable inhibitory effect on its action *in vitro*. Animal experiments showed an effect on staphylococcal infection comparable to that of erythromycin. On oral administration to human subjects streptonivicin was found to give detectable levels in the serum for as long as 24 hours. It diffused into cerebrospinal fluid, ascitic fluid, pleural fluid and bile, and fairly large amounts were excreted in the urine and the faeces. Unfortunately, the concentration in the serum showed considerable variation in preliminary trials. The agent is, however, relatively non-toxic and of sufficient interest to warrant further study.

#### ACTINOMYCIN C

In 1949 in Germany a substance called actinomycin C was isolated from a streptomyces; this was later stated to have an inhibiting effect on malignant tumours in rats, and a cytostatic effect particularly on the lymphatic system. Reports by German workers of improvement due to actinomycin C in patients suffering from tumours of the reticulo-endothelial system led to further investigation of the substance in various parts of France and in England. Results are unfortunately not very promising. A group of workers from Guy's Hospital, London,<sup>1</sup> have reported treatment of six cases of Hodgkin's disease and one of reticulum-cell sarcoma with significant regression in only two cases.

In France the Minister of Health has on two occasions held conferences<sup>2</sup> of hospital chiefs in Paris on the subject of their clinical experience with actinomycin C. At the last conference, the largest series treated was reported by Croizat and Lacoste of Lyons, who had given the substance by intravenous injection in daily doses of 300 to 400 µg. for three weeks to 44 patients, most of whom had either Hodgkin's disease or reticulo-sarcoma. They consider that their results were not as good as those obtained with x-rays or nitrogen mustard, though combination of actinomycin C with x-rays permitted lower x-ray dosage. A group from Montpellier described two cases in which increasing the dosage of actinomycin C to 1,000 µg. a day apparently led to death by agranulocytosis. Other groups from Marseilles, Toulouse, Geneva and Paris gave similar disappointing reports, though they feel that the substance was not entirely inert.

A study made in Rome suggested another possible use for actinomycin C, which was shown to give therapeutic results in asthma and urticaria. Actinomycin C is not without side-effects, usually consisting of stomatitis, pharyngitis, nausea and diarrhoea.

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## PUBLIC RELATIONS FORUM

*Conducted by* L. W. HOLMES,  
Assistant Secretary, C.M.A.

IX. THE DOCTOR AND  
COMMUNITY RELATIONS

PRECEDING ARTICLES in this series have dealt with suggestions designed to help the individual doctor improve the public relations of his medical practice. This article will discuss the physician as a citizen, outlining ways in which he may regain his rightful place as a community leader.

There was a time when the physician was the most learned individual in the community and he was almost invariably looked to for leadership in every community enterprise. Then several things happened. The rapid development of medical science, the need for more extensive medical education, the growth of specialism made greater demands on the doctor's time and thought. At the same time more and more people went to college. As a result of these combined influences, the physician began to share cultural leadership in the community with members of other professions.

"Unfortunately," writes Bryan in his books on medical PR, "in so far as medicine is concerned, cultural leadership seems not merely to have been shared, but too often completely relinquished. For the most part, physicians have retreated into their consulting rooms, and left the rest of us to fend for ourselves."

Doctors are medical men—but they are also citizens, and as citizens they are obliged to shoulder their share of community responsibility. Their acceptance of this responsibility will, indirectly, bring rich rewards. They will gain prestige; they will learn the principles of good human relations; they will win friends, and friends are essential to good public relations—friends who understand the problems of the practising physician and of organized medicine and who are aware of the doctors' sincere efforts to be good doctors and good citizens. To have friends one must be a friend, and friends are won through contacts, through close association in community activities working for similar causes and goals.

And the community gains, too. There are many areas in which the doctor may contribute sound judgment and valuable advice, in which the doctor's abilities are essential to wise community action.

A physician writes: "The people of the community, be it a small town or a large city, expect the doctor to assume his civic responsibility. They want and appreciate the physician's advice on a variety of community problems. All of us are not experts in all community problems, but any physician can contribute his time and ability along a community line that interests him. He

will be rewarded far out of proportion to the time he gives."

As has been said, the doctor in the past was always a community leader. Too often today, the doctor pleads that he is "too busy" to participate in local activities. Doctors should take a vital interest in public education, serving on school boards or on Home and School committees; or working with service organizations, the Boy Scouts, the Y.M.C.A., or charitable and philanthropic groups which improve community living. Doctors can offer valuable aid to voluntary health organizations and lend support and energy to the work of religious organizations.

By selecting those organizations of real interest to him, joining them and actively participating in their activities, the individual physician can do his share in furthering good community-doctor relations. Indiscriminate joining is not the answer. The demands of medical practice are heavy. The wise procedure is for the doctor to choose only those groups which particularly interest him and for which he can find time.

If a doctor is asked to participate in some community project and feels that he must refuse, he should take pains to explain carefully why he must say no, so that he does not offend.

As a citizen, a physician has certain other community responsibilities. He should vote in all elections, take an active interest in political affairs, and perhaps even hold office. In this way he helps protect not only the welfare of the community, but also the future of Canadian medicine.

Yes, the doctor is an important man in his community. The weight of his responsibilities is heavy upon his shoulders—but the rewards of his life are many. These rewards—friendship, admiration, appreciation and respect of those around him—may be increased manyfold if he accepts the additional responsibilities of good citizenship. And the medical profession as a whole shares in these gains.

PR TIP: THE DOCTOR AND HIS  
TELEPHONE ANSWERING  
BUREAU

THE TELEPHONE ANSWERING service plays a vital role in the battle against disease—as long as it works efficiently. But breakdowns in communication do occur—many of them attributable to failures on the part of subscribers.

The president of a large telephone answering bureau has compiled the following list of "common, everyday occurrences," all of which produce the same results—"errors, helplessness, delay, and the one thing every bureau hates to give—POOR SERVICE!"

1. The doctor neglects to advise his bureau he will not be on call tonight and does not sign out to an alternate.

2. Dr. A. advises his bureau he is signing out for the night to Dr. B., but fails to advise or consult Dr. B. on the matter. (Many times Dr. B. knows nothing about it and has taken himself off call.)

3. The doctor tells his nurse to advise the bureau of his sign-out plans, but the nurse forgets to inform the bureau.

4. The bureau calls Dr. A.'s home, leaves a message with Mrs. A. to have the doctor check in—but Mrs. A. forgets to give her husband the message.

5. Same as above, except the maid, baby-sitter or the doctor's child answers the phone.

6. Dr. A. goes out on calls and leaves a list with Mrs. A. The bureau calls Mrs. A., gets the list, tries all of the numbers and cannot reach the doctor, eventually having to call the home back and leave a message.

7. The doctor refuses to talk to the patient with the result that the patient may continue calling the answering bureau all night long.

8. The doctor forgets to notify his bureau of changes in schedule, routine and staff.

9. The doctor neglects to advise the bureau as to the office and his own status on weekends and holidays.

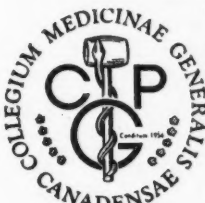
"... If the doctor will consider his answering bureau as important to him and his patients as his ever-present medical bag," the service president writes, "both will be well served at all times. If the doctor will keep his answering bureau with him he will achieve the kind of service he expects and to which he is entitled."

He concludes by suggesting that doctors acquire the answering bureau habit—keeping it advised as to their whereabouts or those of their alternates at all times.

## GENERAL PRACTICE

### COLLEGE OF GENERAL PRACTICE OF CANADA

#### SURVEY OF GENERAL PRACTICE IN CANADA



THE STEERING COMMITTEE of this planned three-year study has appointed Dr. Kenneth F. Clute, 2135 Avenue Road, Toronto, as the Director.

Dr. Clute is a Canadian and 36 years of age. He is a graduate in Honour Arts and in Medicine of the University of Toronto. He has had extensive training in the Toronto General Hospital and the Hospital for Sick Children, Montreal Children's Memorial Hospital, Johns Hopkins Hospital and the University of Maryland. He has his certification in Pædiatrics and is a Fellow of the Royal College of Physicians. He has been in active practice for several years.

The Committee believes that Dr. Clute is well qualified to direct this study because of the wide scope of his training and his sincere interest in the broader aspects of medical practice. A full-time assistant will be appointed as soon as possible—we hope within two or three months—to help Dr. Clute direct this undertaking.

## NEW CONCEPTS IN DISEASES OF THE PROSTATE\*

HARRY R. NEWMAN, M.D., F.A.C.S.,†  
New Haven, Conn.

ONE OF THE CHIEF objectives in urology is the maintenance and preservation of renal function. Urinary tract obstruction and infection destroy more renal function than all other causes combined, although nephrosclerosis from vascular changes is a very close competitor.

The prostate gland is so located anatomically in relationship to the bladder neck that any pathological process which occurs in this gland, especially in the periurethral portion, may interfere with the urinary flow, and thus ultimately destroy renal function. The commonest offenders are inflammation, benign hypertrophy and carcinoma. These may be present individually or in combination.

The prostate gland may be involved in either acute or chronic inflammatory conditions.

### ACUTE PROSTATITIS

Acute infection of the prostate gland, prostatitis, results from invasion of the gland by pyogenic organisms. The bacteria reach this structure by direct ascent or by the blood stream, from distant foci of infection. About half of the cases begin during an acute attack of gonorrhœa. The acute inflammatory process may resolve, or extend to involve the seminal vesicle, epididymis, bladder and kidneys. It may also leave a diffuse prostatitis, or in a few cases reach a chronic stage with scarring and contracture of the bladder neck, causing urinary tract obstruction. Occasionally a prostatic abscess develops, requiring drainage. The symptoms of acute prostatitis are urgency, frequency, burning pain in the perineum, and occasionally, difficulty in urination or even urinary retention. The prostate gland is enlarged, boggy and tender. Treatment during the acute stage consists of absolute bed rest, ample fluid intake and administration of antibiotics.

### CHRONIC PROSTATITIS

Chronic prostatitis may occur without a previous history of an acute prostatitis. The commonest causative organisms are Gram-positive bacteria, *Staphylococcus aureus* and *albus*, *Streptococcus hæmolyticus* and *non-hæmolyticus*, *Micrococcus*, diphtheroids and colon bacilli. *Pneumococcus* and *Pseudomonas aeruginosa* may also invade the prostate. The gonococcus is rarely found, and occasionally tuberculosis in-

\*An address given at the Symposium on General Practice, Ontario Chapter, College of General Practice of Canada, Toronto, Sept. 22, 1955.

†From the Department of Urology, Yale University School of Medicine.

volves the prostate gland. Symptoms most predominant are a dull ache in the lower back over the sacrum and discomfort in the back of the thighs, in the form of a pulling sensation. There is occasionally a urethral discharge, usually noticed the first thing in the morning but also often during the process of defaecation. Usually there is no associated disturbance in urination. The prostate gland feels normal in size, but is slightly boggy; the prostatic smear reveals the presence of numerous pus cells. Culture and sensitivity tests are obtained of the prostatic secretion. Treatment consists of antibiotics, prostatic massage two or three times weekly and, if irritative symptoms are present, instillation of 0.25% silver nitrate into the prostatic urethra, and weekly dilatations to 30-35 F. with a Kollmann dilator. A course of treatment should last 6-8 weeks. Failure to secure benefit demands urethroscopy.

#### BENIGN HYPERTROPHY OF THE PROSTATE

Benign hypertrophy of the prostate gland is the commonest cause of urinary tract obstruction, accounting for 80% of the obstructions at the bladder neck. One-third of men past 60 years of age have some enlargement of the prostate gland. It is now considered that benign hypertrophy of the prostate gland is due to endocrine imbalance. Normal amounts of male hormone are necessary for development and maintenance of the gland. According to the work of McCullagh, and also McCullagh and Walsh, there are two testicular hormones: (1) androsten (testosterone) formed by the interstitial cells of Leydig, and presiding over the development and maintenance of a normal prostate; (2) inhibin or contruin, formed by the germinal epithelium. Lack of inhibin causes hypersecretion of the anterior pituitary, which in turn stimulates the formation of excess testosterone which produces prostatic enlargement. Castration or hypophysectomy causes atrophy of the prostate gland. The prolonged injection of anterior pituitary or anterior-pituitary-like substances into the experimental animal causes enlargement of the prostate.

In order to understand the symptomatology and the various types of surgical approach for the removal of an enlarged prostate, it may be helpful to briefly discuss the pathogenesis of prostatic hypertrophy.

#### Pathology

The pathogenesis of prostatic hypertrophy is fairly well known. It begins as small spheroids of hypertrophy beneath the mucosa of the prostatic urethra, presumably in the mucosal or submucosal glands of the urethra rather than in the prostatic gland itself. If the bulk of the hypertrophied tissue intrudes into the bladder behind the internal meatus, it is known as a median lobe

hypertrophy; if the hypertrophy is localized to either side of the prostatic urethra, it is an intra-urethral type of hypertrophy; if the lateral lobes intrude into the bladder, the condition is called lateral lobe intravesical hypertrophy. A ring of hypertrophy around the internal meatus is a "collar type" of hypertrophy. Usually, there is some hypertrophy in all areas, although one area may predominate. Isolated spheroids may occur upon the vesical trigone behind the internal urinary meatus (subtrigonal hypertrophy).

#### Symptomatology of Prostatism

In the early stages of prostatism, the chief complaint is urinary frequency during the day, and at a later time nocturia, which gradually becomes more frequent as the degree of obstruction progresses. There is also associated decrease in calibre of the urinary stream accompanied by difficulty in starting the act of micturition and excess dribbling at the end of the act. The calibre of the urinary stream becomes markedly decreased, losing the normal arc which is produced during micturition. Rectally, the prostate gland is usually enlarged, smooth in contour, and rubbery in consistency. Residual urine may be present in the bladder.

#### Treatment

Four avenues of approach for the removal of the hypertrophied prostate are open to the urological surgeon. These are the transurethral, suprapubic, retropubic and perineal routes. A well-trained surgeon can achieve excellent results with low mortality no matter which of the standard methods he uses, although the method of approach chosen will vary with the medical status of each patient, and depend on the anatomical variation in the pathogenesis of the hypertrophied prostate. For example, an enlarged prostate of the intraurethral type can be removed by any of the above techniques. A large intravesical prostate with a long posterior urethra is best removed by the suprapubic route, although other approaches can be used. Bladder neck obstruction resulting from fibrosis, median bars, moderate enlargement of the prostate gland, and advanced carcinoma is best removed by the transurethral route.

In the last consecutive 150 prostatectomies, performed on ward and private patients, we have not had any deaths; about 40% were removed by the transurethral approach, 45% by the suprapubic route, 10% by the retropubic route and 5% by the perineal route. Other members of our staff have equally good results and they perform a higher percentage of perineal or transurethral prostatectomies. However, the lower morbidity and mortality in prostatectomy are due to several factors—good surgery and excellent preoperative and postoperative management.

# CARCINOMA OF PROSTATE

*Prostatic cancers* are common. Probably 5% of all men who reach the age of 60 years develop the disease. In comprehensive studies of prostates removed because of benign hyperplasia, nests of cancer cells have been discovered by the microscope in about 20%. The complete removal

a decrease in the urinary androgens and the glands in the posterior lobe of the prostate atrophy; for some reason unknown to the medical world, 85% of cancers originate in this area. Also as man ages, hypertrophy of the prostate gland occurs; this is localized mostly in the lateral and middle lobes.

Experimental attempts to produce adenocarcinoma of the prostate in animals have been unsuccessful.

TABLE I.

CANCER OF GENITO-URINARY ORGANS (UNITED STATES BUREAU OF CENSUS, 1949 - 1953)					
Year	1949	1950	1951	1952	1953
Kidney . . .	3,546	3,643	3,699	3,929	4,014
Bladder . . .	6,313	6,401	6,459	6,750	6,901
Prostate . . .	11,042	11,339	11,492	12,181	12,595
Testis . . . .	687	632	690	613	616

of the prostate is a practical operation which would cure the great majority of all cases if they could be discovered in the first year of the disease. However, the tumours in their growth give rise to so few symptoms that when discovered at least 95% of the cases are incurable by

## Pathology

When cancer develops in the prostate gland, it is confined to the posterior portion of the posterior lobe; growing cephalo-caudad, it may invade the capsule, seldom extending beyond Denonvilliers's fascia posteriorly, and thus rarely invading the rectum. In the late stage, the disease involves the seminal vesicles and the bladder. Spread takes place by direct extension, normal lymphatics, perineural lymphatics and the blood stream. The seminal vesicles are in the same plane as the prostate and are frequently involved. The lymph nodes—iliac, periaortic, hypogastric—are most frequently the site of metastasis.

TABLE II.

RATIO OF INCIDENCE OF CANCER OF PROSTATE TO CANCER IN OTHER ORGANS: BREAST, STOMACH, CERVIX, LUNG. (UNITED STATES BUREAU OF CENSUS, 1951 - 1953)						
Cause of death	Number			Rate per 100,000		
Year	1951	1952	1953	1951	1952	1953
Cancer breast . . . . .	19,179	19,892	20,566	12.5	12.8	13.0
Cancer stomach . . . . .	23,683	23,466	23,373	15.4	15.1	14.8
Cancer prostate . . . . .	11,492	12,181	12,595	7.5	7.8	8.0
Cancer cervix . . . . .	8,121	8,329	8,510	5.3	5.3	5.4
Cancer lung, trachea, bronchus . . . . .	8,438	8,716	10,564	5.5	6.2	6.7

present methods because the tumour has progressed beyond the prostate. A report on cancer mortality of the National Office of Vital Statistics (1953) of the United States (Tables I and II) reveals the total numbers of men dying from prostatic cancer, 12,595, or a rate of 8.0 per 100,000. It is a rare disease in the male under 40 years, is common over 50 and reaches its highest level in the seventh decade. Carcinoma of the prostate has the same incidence in Europe as in the United States.

## Etiology

The cause of cancer of the prostate is unknown. It would seem from evidence on hand that both nodular hyperplasia and prostatic cancer result from a disturbance of the ratio and quantity of circulating androgen and oestrogens in man. Yet, as far as we know, no one has been able to induce cancer in animals by the prolonged use of androgens. However, as man ages there is

Osseous metastases are frequent, the pelvis and sacrum being most commonly involved (in about 85%). However, the femur, spine, ribs and even the skull and tibia may show metastases. The bone metastases are commonly osteoblastic (Figs. 1 and 2), giving rise to increased density in bone, but sometimes the lesion in bone may be osteolytic or may even be a combination of these two lesions. Visceral metastasis occurs in 40% of cases (Willis). Occult carcinoma or latent carcinoma has a high incidence, occurring in about 20% of individuals over 50 years of age who are autopsied.

Microscopically about 97% of prostatic cancers are adenocarcinomas, 2.5% squamous cell epitheliomas and 5% a mixture of the two (Thompson 1942). The tumour arises from the acinar or ductal epithelium of the prostate, and may vary considerably in its glandular differentiation and anaplasia. The term adenocarcinoma has been used to describe the majority of those tumours that are well differentiated. Carcinoma



Fig. 1.—Metastatic lesion, osteoblastic in type, from carcinoma of the prostate involving ilium.

simplex and small cell carcinoma are less common and are differentiated tumours. The adenocarcinoma reacts best to hormonal treatment and the squamous, the poorest. Undifferentiated cancers are also unaffected by stilboestrol. A rather common finding in prostatic cancers is of microscopic evidence of perineural lymphatic invasion by the cancer. This is the best microscopic evidence of malignancy.

The Gutmans in 1938 showed that the prostate was an essential producer of an enzyme, phosphatase. Before puberty, the prostatic epithelium contains little or no acid phosphatase. In carcinoma of the prostate, especially when the



Fig. 2.—Paget's disease of skull demonstrating marked thickening of bone, for comparison.

malignancy has extended outside the confines of the gland, there is an associated elevation of the serum acid phosphatase level. One may say that an elevated phosphatase level always signifies the presence of carcinoma, and also that the growth has extended outside the gland. The only exception to this statement is the rare situation of Paget's disease of bone, the bones being so active that a huge alkaline phosphatase level seems to drag out a mild rise in acid phosphatase. Also, immediately after trauma to the prostate, a brief rise can often be detected. This may occur after prostatic massage, for example. It may be added that 90% of prostatic carcinomas produce acid phosphatase, and 10% produce little or no acid phosphatase. Anything up to 3 King-Armstrong units per 100 c.c. is considered normal, between 3 and 10 units suggestive; over 10 units, cancer is certain. An excess of this enzyme may be present when bone is invaded by carcinoma, with levels even up to 1,000 units per 100 c.c.

Charles Huggins and others showed in 1939 that androgen causes metaplasia of the prostatic epithelium, stimulates cancer growth, and raises the serum acid phosphatase level. The elevated serum acid phosphatase level in prostatic carcinoma is further raised by the administration of androgens. Castration, and oestrogens to a lesser extent, diminish cancer growth and the serum acid phosphatase in from 80 to 90% of patients. In patients responding favourably to orchiectomy, there is a return of elevated serum acid phosphatase level to normal or nearly normal within 24 to 48 hours. There is also an immediate increase in serum alkaline phosphatase following orchiectomy which indicates osteoblastic activity, presumably in the region of the osseous metastases. However, after castration, the androgens from the adrenals or from elsewhere may still stimulate the cancer cells to activity.

The clinical course of prostatic cancer as related to the level of serum acid phosphatase can thus be summarized as follows: (a) When an isolated nodule of carcinoma is present in the prostate and there are no metastases, the acid phosphatase level is normal. (b) When metastases are present with carcinoma of the prostate, although the patient may be asymptomatic, the acid phosphatase level is elevated above 10 units per 100 c.c. and this is diagnostic of metastasis. Elevated alkaline phosphatase indicates osteoblastic activity. (c) Following orchiectomy, there is an immediate drop in acid phosphatase level and transient elevation of alkaline phosphatase, reflecting repair of metastatic bone lesions at this time. The clinical symptoms from the metastasis may be entirely relieved. (d) After a remission of symptoms induced by orchiectomy, symptoms may recur indicating renewed metastatic activity, and the acid phosphatase again rises above normal. (e) At this point, a bilateral adrenalectomy may be considered. (f) A bilateral adrenalectomy in favourable cases causes a remission of symp-

toms and fall in acid phosphatase level for a period of months, but metastatic lesions do not disappear.

#### *The Relationship of Steroids to Carcinoma of the Prostate*

Certain steroids are presumed to have their origin in the adrenals and in the testes. Studies have shown that the 17-ketosteroids are essentially the same in amount in normal aging patients and in patients with cancer in the prostate. Before castration, the level of 17-ketosteroids in the urine is reported by Scott to be 7.6 mg. per 24 hours. After castration, the level is greatly lowered, and this is then followed by a rise. The rise is thought to be due to adrenal activity, since the adrenal gland is the big source of steroids and the testicle produces much less. When a bilateral adrenalectomy is performed, the amount of 17-ketosteroids in the urine falls, and the urinary androgen level is greatly lowered.

#### *Symptomatology*

There are no early symptoms of carcinoma of the prostate, and early cases are usually detected on routine rectal examination during the process of routine physical examinations, especially in males over 50 years of age. Symptoms, when they do occur, are usually indicative of a late stage in the disease. The frequency of the various symptoms was enumerated by Barnes in 1940, when he analyzed 664 cases of prostatic cancer. Clinically it may therefore be helpful to distinguish three groups of patients with carcinoma of the prostate: (1) early groups—symptomless; (2) second group—with symptoms of prostatism; (3) third group—having symptoms from metastatic lesions.

On the general practitioner can rest the responsibility of the early diagnosis of cancer of the prostate. In this age of great medical progress, which has produced so many advanced laboratory procedures, we still must depend on the intelligent use of the index finger in order to diagnose an early case of cancer. The small, hard nodule in the prostate must be differentiated from the nodule of chronic prostatitis which is usually more diffuse and not fixed. Prostatic calculi if present are diagnosed radiologically.

Final diagnosis of a nodule, however, is made by open biopsy (perineal) and histological examination of the tissue excised. Negative needle biopsies do not necessarily rule out carcinoma, because one may have failed to aspirate the proper area. Flat x-ray films of the abdomen and pelvis should be taken in every suspected case of carcinoma of the prostate. Cystoscopic examination is non-contributory, except in the late stages of the disease, at which time the urethra

is fixed. The serum acid phosphatase level in the early stages is normal. The cytological examination of the prostatic smear may be a useful addition to the methods of diagnosing carcinoma of the prostate. However, before this becomes an accurate diagnostic procedure, more work has to be done to compare smears in early carcinoma of the prostate. To date, this diagnostic procedure has not been reliable in our hands, although Hannah Peters of Rochester University has done excellent studies on this phase of the work.

#### *Treatment*

Treatment consists of operation on the gland itself, castration, and administration of synthetic oestrogens. Each of these three methods has its exponents; but if we are to cure cancer, we must operate on the early lesions early, and institute the other forms of therapy for those not suitable for surgery. About 50% of patients will survive for five years after a radical perineal prostatectomy. The operative mortality is low, but certain complications are to be expected; about 25% have some degree of incontinence and nearly all are impotent. Occasionally, a urethral or rectal fistula results which can subsequently be closed. Radical retropubic prostatectomy produces an equally good result, and some urologists, such as Chute in this country and Millin<sup>7</sup> in England, are very keen on this surgical procedure, which is being done more and more throughout this country. The incidence of incontinence with this procedure is claimed to be less than that with the perineal approach. However, osteitis pubis has been more often reported in the literature, although Millin<sup>7</sup> in his experience has not found it so.

In those individuals with advanced carcinoma of the prostate not suitable for radical procedures, our objectives are: (1) relief of pain and (2) relief of obstruction if such exists. Our best results are obtained by immediate castration and the use of oestrogens. This has been best substantiated by Nesbit and Baum,<sup>9</sup> who presented a statistical survey of 1,818 cases of carcinoma of the prostate subjected to endocrine therapy. In a series of 324 cases without metastases subjected to castration and oestrogen, there was a five-year survival of 44%, compared to the control figure of 10%. In a series of 263 patients with metastases, who were subjected to castration or castration with oestrogen, 20% lived five years; of those who had no endocrine therapy, 6% lived five years. If after a patient underwent castration and endocrine therapy, symptoms still recurred, other forms of therapy were attempted but with poor results. These may be enumerated as follows: (1) bilateral adrenalectomy; (2) hypophysectomy, surgical or by irradiation; (3) administration of androgens; (4) use of chemical inhibitors; (5) use of cortisone; (6) use of colloidal gold.

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## MEDICAL SOCIETIES

CANADIAN ASSOCIATION OF  
PHYSICAL MEDICINE AND  
REHABILITATION

The Canadian Association of Physical Medicine and Rehabilitation will hold the Fourth Annual Meeting on Friday and Saturday, June 1 and 2, 1956, in London, Ontario.

The scientific session will be held on Friday, June 1, and the business meeting on Saturday, June 2, in the Auditorium of the University of Western Ontario Medical School. The banquet will be held on Friday evening, June 1, in the Hotel London.

All enquiries or information regarding the presentation of papers should be addressed to the Secretary, Dr. G. Gingras, 6265 Hudson Road, Montreal, Que.

EIGHTH INTERNATIONAL  
PÆDIATRIC CONGRESS:  
ARRANGEMENTS FOR VISITORS  
TO LONDON AND U.K.

For those paediatricians who propose to pass through London on their way to Copenhagen for the Eighth International Paediatric Congress, The Hospital for Sick Children, Great Ormond Street, London, England, is planning an "Open Day" on Thursday, July 19, 1956. In the morning parties will be conducted round the hospital and the Province of Natal Centre. In the afternoon there will be a series of clinical demonstrations. There will be exhibits in various departments of the Hospital. The British Association of Paediatric Surgeons is arranging a meeting in London at the same time and special programmes are planned for surgical visitors. Visitors will be the guests of the Board of Governors to a buffet lunch and to tea which will be available during the afternoon.

In order to facilitate personal arrangements for visits to other centres in London and elsewhere in the United Kingdom, an information bureau will be opened at the Institute of Child Health early in 1956. August and September are university vacation months and in general it will be better for visits to be planned before rather than after the Copenhagen meeting. All requests for help in visiting other hospitals and university centres should be addressed to the Secretary, Institute of Child Health, The Hospital for Sick Children, Great Ormond Street, London, W.C.1. The bureau will deal only with personal plans; all details regarding hotels, travel and

other arrangements must be settled through official agencies or by other means.

It will greatly help in the arrangements at The Hospital for Sick Children if intending visitors will notify the Secretary of the Institute of Child Health (see above) as soon as possible.

## MISCELLANY

PRESENTATION OF RESULTS  
OF TREATMENT OF CANCER

One of the chief difficulties in evaluating methods of treatment for cancer is the lack of comparable data. It is safe to say that any improvement in cancer treatment of the same calibre as insulin for diabetes mellitus or antibiotics for infections will establish itself without the aid of detailed statistical analysis. In the meantime, however, lives can be saved and pain lessened by the best possible application of known principles as derived from pooled experience. Unless individuals and groups use the same terms in the same way in reporting their cases, there can be no pooling of experience; and multiplication of series will only multiply confusion.

In 1950, the Expert Committee on Health Statistics of the World Health Organization established a Sub-Committee on the Registration of Cases of Cancer and their Statistical Presentation. The recommendations of the Sub-Committee on the presentation of results of treatment have been considered and approved in principle by the Committee on Records and Statistics of the Ontario Cancer Treatment and Research Foundation. It is thought that other groups and individual clinicians may be interested.

RECOMMENDATIONS OF THE SUB-COMMITTEE  
ON THE REGISTRATION OF CASES OF CANCER  
AND THEIR STATISTICAL PRESENTATION

(Abstracted from WHO Technical Report Series No. 25, October, 1950, and No. 53, July, 1952)

The Sub-Committee on the Registration of Cases of Cancer and their Statistical Presentation, of the Expert Committee on Health Statistics of the World Health Organization, has held two sessions and published two reports. The recommendations of this Sub-Committee as they relate to the presentation of results of treatment are as follows:

a. *Intervals for follow-up*—Survival and apparent-recovery rates are recommended to be calculated at the end of one year, two years, three years, etc., from the beginning of the observation, rates for the first five years being based on the total number of cases. For subsequent intervals the denominator of the rate should be the number still at risk at the beginning of that interval, cumulative rates for periods after five years being obtained by the multiplication of consecutive annual rates.

b. *Starting-point of first 12-month interval* should always be specified. This may be, for the comparison of different methods of treatment, the date of the first treatment for cancer.

c. *Untraced patients*—Those who cannot be traced after each 12-month interval should be assumed, for purposes of uniformity and comparability, to have died of unknown causes during that interval.

d. *Untreated patients*—All cases diagnosed as cancer, whether treated or not, should be included, with the exception of patients referred for diagnosis only.

e. *Unconfirmed cases*—Every patient diagnosed as having cancer should be included whether or not the diagnosis has been verified histologically. For special purposes, those not so verified may be studied separately.

f. *Multiple primary lesions*—Patients should be classified according to the site of cancer originally diagnosed. If another primary cancer develops, it should be considered as an intercurrent disease.

g. *Apparent recovery*—It is desirable that the condition of patients classified as alive with no evidence of the disease should be established through examination by the reporting physician or hospital.

h. *Recurrence*—Patients should be classified according to their condition at the end of each reporting 12-month interval, whether or not they have been successfully treated for a recurrence.

i. *Classification of Patient's Condition*—The condition of each patient at the end of each 12-month period should be recorded and tabulated as follows:

- A = Number known to be alive.
- Ao—with no evidence of the disease
- Ac—with cancer present
- Ax—with presence of cancer uncertain
- D = Number known to be dead.
- Do—with no evidence of the disease
- Dc—with cancer present
- Dx—with presence of cancer uncertain at death
- L = Number untraced at end of year.

j. *Definition of Rates*—Survival-rates for each of the periods considered should be defined as follows:

*Crude survival-rate*—The number of persons known to be alive at the end of the period considered divided by the total number who were alive at the beginning of this period.

$$SR_{cru} = \frac{A}{A + D + L}$$

*Corrected survival-rate*—One method of correcting the crude rate to allow for normal mortality is to divide the crude rate, as defined above, by the probability of not dying within a comparable period from any cause other than cancer of the site in question, in a population having the same age distribution as the patients comprising the group. For most sites, this probability (p) does not usually differ appreciably from the probability of not dying from any cause.

$$SR_{cru} = \frac{SR_{cru}}{p}$$

Crude and adjusted apparent recovery rates are also defined.

## SEMANTICS

Elihu Root, arguing the famous Atlantic Fisheries dispute in 1910, admirably summed up the need for semantics: "Half the misunderstanding in this world comes from the fact that the words that are spoken or written are conditioned in the mind that gives them forth by one set of thoughts and ideas, and they are conditioned in the mind of the hearer or reader by another set of thoughts or ideas . . . ."

Nearly every human quarrel, disagreement or misunderstanding is mired by verbal delusions. If they could be squeezed out, as one squeezes an orange, many of these would vanish.

In attempting to arrive at agreements one might consider the following semantic principles:

(1) Every event and every object is a process; beware of absolutes.

(2) Things with the same name seldom have precisely the same characteristics, and, as such, beware of treating them in this manner.

(3) Events are always changing, and usually have many sides, not just two sides. In passing judgment allow for these.

(4) Try to consider all the main characteristics before coming to a conclusion.

(5) A fact is not an inference; and an inference is not a value judgment. They should be kept separate.

(6) At some level agreement is always possible—keep looking for it.

(7) A person with a mature mind is adjusted to uncertainty, not to fixed ideas.

Like a good driver at the wheel of a car, he is safe to the extent that he is ready for anything.

To illustrate the above, the following anecdote appears to have considerable interest.

A foreign-born plumber wrote the governmental authorities that he found hydrochloric acid fine for cleaning drains, and did they agree? They replied: "The efficacy of hydrochloric acid is indisputable, but the chlorine residue is incompatible with metallic permanence."

The plumber wrote back that he was mighty glad they agreed with him.

Considerably alarmed they replied the second time: "We cannot assume responsibility for the production of toxic and noxious substances, and suggest that you use an alternative procedure."

The plumber was happy to learn that they still agreed with him—whereupon he received the following wire: "Don't use hydrochloric acid; it eats away the pipes!"

G. W. PEACOCK

## CORRESPONDENCE

### BRITISH NATIONAL HEALTH SERVICE

To the Editor:

I am interested to see what I hope is only the beginning of a discussion in the Journal on state medicine. We welcome Dr. Etherington to Canada and assure him and his fellow medical immigrants that there is a place for them here so long as they are keen to compete. However, Dr. Etherington has not been taught to believe in the creeping paralysis of state planning. This he must do, as no doubt he will. He of course belongs to the generation of Englishmen who have never known free enterprise; a generation who have been taught to believe in the creeping paralysis of state planning. To be fair I must admit that as a Canadian, enjoying an era of booming expansion, I am in no position to criticize Britain's attempts to repair her shattered economy. However, it is just these differences in conditions which completely unfit for us a similar health scheme.

Dr. Etherington's letter very well emphasizes the state of mind bred by socialism. A state of mind which puts its faith in government-appointed committees which relieve the individual from responsibility, whose indecisiveness gradually breaks down and wears out even the most energetic members of society. To illustrate, there is the well-authenticated story of the radiologist in Southwest England who, finding himself slipping behind in his work, scouted about until, in a nearby hospital, he found a used x-ray machine stored away in a dark corner. This serviceable machine would admirably have suited his purpose and, besides, he had a room just large enough to house it. After due consideration, the two hospital committees decided he could have it. However, after some months of percolating between various regional and central committees and subcommittees it was decided to buy a new machine. An order was placed

and a year later the machine arrived. It was then found that the new equipment would not fit in the available space. Months more of delay occurred while a new building was built to house the apparatus. Something deadly seems to afflict even a good man when he finds himself a member of a committee.

I do not know much about the provision of medical care in England prior to the N.H.S. If people waited longer or were neglected more than now, it is obvious that the British medical profession have brought their woes on themselves. One morning in England I anaesthetized three patients for diagnostic curettages. One had been on the gynaecologist's "list" three months, one five months, and one eight months. The 54-year-old proved to have a carcinoma of the fundus. On another occasion a surgeon who was biopsying a breast tumour looked over the screen at me and said, "Since I have been here, I see to it that all these cases are biopsied within three months of being seen by me." And here is the point. These men, and very good men they are, are not clamouring for more hospital beds or for more staff. There would seem to be a feeling of helplessness and hopelessness among these first-rate men, engendered, I am forced to think, by a system too big and too doughy for anyone to fight.

I must take issue also with Dr. Etherington's conclusion that "no one will quarrel with the principle" that curtails the use of new and specific drugs! I certainly would quarrel with any state scheme which spends millions for tons of relatively inactive "mixture" etc. and then is unable to buy the necessary effective preparations. This is typical bureaucratic thinking. Nor am I interested at all in "a committee of my fellow practitioners." Most of my fellow practitioners are too busy and too interested in medicine to sit on committees. The rest, and their opinions, have no interest for me at all.

However, Dr. Etherington and I agree on most points. I am sure that before long, in the stimulating atmosphere of Canadian medicine, my friend will learn to view with misgiving and alarm the incursion of committees and committee-thinking into our chosen field of endeavour. I wish that he and his friends recently arrived in Canada would release a flood of articles in all directions on this subject. For too long we have been subjected to eulogies of the principles of state medicine by English doctors. With the avowed principles we have no quarrel. With its practice—ah, there is another tale. And we have no reason to believe that a similar scheme in Canada would be any better.

Wakefield, Que.,  
December 26, 1955.

J. H. S. GEGGIE, M.D.

## WORLD MEDICAL ASSOCIATION

### GIFT TO AFGHANISTAN

A practical illustration of the way in which the more privileged members of the World Medical Association can be of service to their less favoured colleagues in other parts of the world is given by the recent transmission of four boxes of slides from the Department of Pathology, University of Toronto, and the Canadian Supporting Committee of the World Medical Association to the Medical Faculty, Kabul, Afghanistan. A Canadian physician, Dr. Stephen Falkland, who is working in Kabul on a World Health Organization assignment, handed over the gift at a ceremony on October 24, 1955. The Acting Dean expressed the thanks of the faculty for this useful gift. Such gestures cost comparatively little, but reap a great harvest in promoting good will between physicians of various countries. It is to be hoped that this example will be followed by other groups of physicians.

## OBITUARIES

DR. FREDERICK MOORE AULD, 76, prominent British Columbia physician, died recently in Kootenay Lake General Hospital. Dr. Auld was born at Cove Head, P.E.I., and graduated in 1909 from McGill University. He spent many years as a medical missionary in China, leaving that country to serve in the Royal Army Medical Corps in France during the First World War. Dr. Auld had practised medicine in British Columbia since 1929, serving for a time as medical health officer for Nelson and setting up the first hospital laboratory there. He had been a district coroner since 1941.

Dr. Auld is survived by his widow, a son and a daughter.

DR. ELOI PHILIPPE CHAGNON, widely known in Montreal medical circles and specialist in mental diseases, died on December 4 after a short illness. He was 91. Dr. Chagnon was born in Verchères, Que. and graduated from Laval University in 1890. He subsequently served on the staff of various Montreal hospitals. In 1911 he joined the Health Department of the City of Montreal, later transferring to the Legal Department as medical expert. Well known in the cultural and social life of Montreal, Dr. Chagnon was, amongst other things, a charter member of the Cercle Universitaire and the Alliance Française de Montréal, of which he was a treasurer for a number of years.

Dr. Chagnon is survived by his two daughters.

DR. PETER O. HEBB, 46, a prominent physician of Dartmouth, N.S., died suddenly at the Victoria General Hospital on December 1, after a short illness. Dr. Hebb was born in Chester, N.S., and received his medical degree from Dalhousie University in 1934. He set up practice in Dartmouth in 1937, and in 1941 was one of the founders of the Dartmouth Medical Centre which is today one of the most modern in Eastern Canada.

Dr. Hebb is survived by his widow, two daughters and two sons.

DR. HUGH D. MCCOLL, well-known Petrolia, Ont., physician, died suddenly on November 29 following a heart attack. Dr. McColl was born in West Lorne, Ont., and attended the medical school of the University of Western Ontario. He interned at Lying-in Hospital, New York City, before going to Petrolia in 1927.

Dr. McColl is survived by his widow and two daughters.

DR. JEAN MICHON, a radiologist at the Hôpital Notre-Dame, Montreal, died in that hospital on December 10 after a short illness. He was 40. Dr. Michon graduated from the University of Montreal in 1941 and was a member of the Royal College of Physicians and Surgeons of England. During the Second World War, he served as a Lieutenant Commander in the Royal Canadian Navy.

Dr. Michon is survived by his widow, a son and three daughters.

DR. MORRIS SCHREIBER, 49, former Port Coquitlam general practitioner, died in St. Paul's Hospital, Vancouver, early in December. Dr. Schreiber was born in Winnipeg and was a graduate of the University of Manitoba. He went to Port Coquitlam in 1943 and remained there until September 1955, when he moved to Vancouver.

Dr. Schreiber is survived by his widow, a son and a daughter.

WILFRED PARSONS WARNER, D.S.C., C.B.E.,  
M.B., F.R.C.P.[C.], LL.D.(Tor.)

#### AN APPRECIATION

Dr. Wilfred Parsons Warner, Director General of Treatment Services of the Department of Veterans' Affairs for the critical decade since 1945, died in Sunnybrook Hospital, Toronto, on December 2, 1955. His premature death at 59 has been a grievous loss to his friends in every part of Canada; to the veterans for whom he had laboured so hard and so successfully to bring the high standard of medical treatment and care which a grateful country wished them to have; and to Canadian medicine whose progress he advanced as a clinician, and whose reputation he enhanced as an administrator of wide vision, ready sympathy, and tenacity of purpose. He is survived by his widow, the former Dorothy MacRae, and by three children of a former marriage, John, a teacher in Kingston, and two daughters, Janet and Anne, in Toronto.

The son of the Reverend Robert Warner, Principal of Alma College, he received his early education in the Public School and Collegiate Institute of St. Thomas, Ontario. In 1914 he entered the Medical School of the University of Toronto, from which he graduated in 1920, after interrupting his course in 1917 to serve as a Surgeon-Probationer in the R.N.V.R. He was awarded the Distinguished Service Cross while on active service in H.M.S. Forester; and after returning to the University in 1918 his excellence as a student won him election to the Alpha Omega Alpha Honour Medical Society.

The four years following graduation were spent in hard postgraduate study at the University of Toronto. With characteristic thoroughness he spent a year in physiology and another in pathology as a preparation for clinical training. These were years of remarkable activity in the University of Toronto Medical School, and Warner worked and studied with unusually gifted teachers and many stimulating contemporaries. His clinical work was done under Professor Duncan Graham, then in the midst of the post-war rebuilding of the Department of Medicine at the University of Toronto and of the Toronto General Hospital. Professor Graham had associated with him colleagues of wide clinical experience, strong character, and first-rate qualities as teachers; and they put a stamp of quality on the young graduate, whose character and abilities already had been recognized as outstanding. To this period may be traced Warner's first-rate clinical judgment, his facility in placing principles above details, his quick perceptions, and his power of resolute decision.

Bitter disappointment was in store for him at the completion of his training, for he developed tuberculosis. With characteristic courage he accepted the blow, and after two years "on the cure" he entered practice in association with the Colbeck Clinic in Welland, Ontario. Here he gained an understanding of the problems of practice and of types of illness not often seen in hospitals. Here, too, he found time for study and writing; and in 1928, with Dr. Scozzafavia, he published the first detailed account of the symptomatology and clinical course of *Brucella abortus* infection in man occurring in Canada (*Canad. M. A. J.*, 19: 177, 1928). In 1929 he resumed his close association with Professor Graham, when he was appointed to the staff of the Department of Medicine of the University of Toronto and to the Medical Service of the Toronto General Hospital. He also commenced a consulting practice in Toronto, and for the next ten years he led an active and productive life in teaching, in clinical investigation, and in practice. He proved to be a good teacher with a particular flair for stimulating interest and thought. The soundness of his ideas and his imagination in co-ordinating facts earned him the high regard of his colleagues. He continued studying and writing, and several of his reported observations were fundamental in increasing our understanding of pulmonary diseases, particularly bronchiectasis and lung abscess.

At the outbreak of war in 1939 Warner enlisted, and was appointed Officer in Charge of Medicine in No. 15 Canadian General Hospital. He served with this unit in England, but was invalided home in June 1940. From this time to his death his health was never vigorous, but he carried on without complaint and without sparing himself. For the remainder of the war he served as Consultant in Medicine, and later as Deputy Director of Medical Services with the rank of Brigadier. His services were recognized in January 1944, by the award of the C.B.E.

When the Department of Veterans' Affairs was planning for the urgent problems of demobilization, Warner was the man trained and qualified to assume the responsibilities of Director General. Here was a challenge demanding full use of his past training and experience and of those inherent qualities which had made him such a success as a clinician and university teacher and in both the clinical and administrative branches of the R.C.A.M.C. With his customary ability to simplify, he set his main objective as the provision of the best medical treatment for every veteran entitled to it; and, as a secondary but complementary consideration, he determined that this treatment should be provided as economically as possible consistent with first-rate quality. He knew that there could be no compromise with quality, and he held firmly to the opinion that the service should be made first-rate and not merely good. He believed that veterans would receive better treatment if the different hospitals could be partially staffed by doctors active in practice and in teaching, and that each hospital should have an active training programme which would attract interns of the highest quality.

The different hospital staffs had been depleted during the war, and there was urgent need to rebuild them. Warner proposed a plan for part-time employment of clinical staff with payment on a sessional basis. To facilitate this he advanced the idea of close association between the D.V.A. and the universities, staff vacancies being filled in university centres from a panel nominated by the Dean of Medicine. To achieve all this he had to convince his superiors of the soundness of his plans, both financially and clinically, and he also had to secure the support of the medical schools and the profession generally. All this he did; and the results evident today are both proof of the vision and the soundness of his planning and of the judgment of those in Government and in the profession who supported him. The D.V.A. hospitals have given veterans the first-rate care Warner insisted on. The system of part-time employment of doctors has proved to be economical and capable of variation according to need; and it has enabled every hospital to appoint young men with fresh ideas. The intern training programme has not only ensured good care of patients and continued interest of senior clinicians, but it has also trained many young men now prominent in practice all over the country. Another little-recognized benefit has been the interest stimulated by Warner in medical administration, and in the need for clinicians to be cost conscious in every aspect of medical care. He also insisted on his administrative group taking a constant interest in the problems of the clinicians; and as a result clinicians and administrators have worked efficiently as a team to improve treatment and to lessen its cost.

Warner was never satisfied with the progress made, and he worked constantly to improve the service. As his first plans matured, he developed the idea of encouraging active research and clinical investigation in the different D.V.A. hospitals, because he believed that this would stimulate and improve the clinical staffs. He planned carefully, and with the advice and support of his colleagues he established a number of clinical investigation units in the larger hospitals, and encouraged the smaller ones to commence research projects suitable to their facilities and needs. This programme has been very successful, and it has achieved its purpose of stimulating investigation into the special problems seen in D.V.A. hospitals and of improving treatment generally.

Warner's achievements in the Department of Veterans' affairs were followed by all branches of the Civil Service with increasingly approving regard, and in 1954 he was awarded the Gold Medal of the Professional Institute of Public Services of Canada, the highest possible award in the Civil Service. The citation accompanying this read—"For help in making the care of former servicemen the best in the world." To Warner no other praise could have been sweeter. A year later the University of Toronto conferred upon him the degree of LL.D. *honoris causa*. As with the medal of the year before, he said modestly that he was receiving an honour on behalf of every member of the Department, whose work for ex-servicemen he considered to be of such importance to Canada.

Dr. Warner's life was one of the most useful in the records of Canadian medicine. Despite the importance of his contributions to clinical medicine and to the R.C.A.M.C., his greatest achievement was as Director General of Treatment Services. His ideas and ideals of what a great hospital service should be, and the principles upon which he established it, will endure, and will be of great help in future planning for efficient distribution of medical care for civilians and veterans alike. His exceptional ability to bring together people with conflicting ideas and interests to work towards the common good will long remain an ideal for Canadian doctors.

His indomitable courage, equally shown by Mrs. Warner, was particularly evident during his final illness, and was a further example of his strength of character and sound medical philosophy. R.I.M.

In almost all cases in which necropsy findings were available, and in which the electrocardiograms had shown abnormalities of this kind, *subendocardial myocardial infarction* was found in the anterior or lateral wall of the left ventricle.

It appears that deeply inverted T waves of the kind described in this study are commonly an expression of the presence of a transmurally disposed region of myocardial ischaemia, under which there may be a sub-endocardial zone of myocardial infarction. S. J. SHANE

#### Mechanical and Myocardial Factors in Rheumatic Heart Disease with Mitral Stenosis.

R. M. HARVEY *et al.*: *Circulation*, 11: 531, 1955.

Sixteen patients with rheumatic heart disease and pure mitral stenosis who were studied by cardiac catheterization were selected to demonstrate the relative importance of mitral block and myocardial insufficiency in this disease.

Analysis of the dynamics at rest and during exercise has permitted a division of these patients with mitral stenosis into two groups, one with mitral block characterized by pulmonary hypertension of varying degrees and a fixed or subnormal response of cardiac output to exercise, and the other in which little or no pulmonary hypertension exists but in whom cardiac output does not increase normally on exercise. In the latter group myocardial insufficiency was felt to be the predominant lesion uncomplicated by any important element of mechanical block.

The importance of recognizing the existence of a group of rheumatic patients with mitral stenosis and primary myocardial insufficiency is emphasized, since commissurotomy will not produce any improvement in function in such cases. S. J. SHANE

## ABSTRACTS from current literature

### MEDICINE

#### Certain Clinical States and Pathologic Changes Associated with Deeply Inverted T Waves in the Precordial Electrocardiogram.

R. D. PRUITT, C. H. KLAKEG AND L. E. CHAPIN: *Circulation*, 11: 517, 1955.

Certain patients are occasionally encountered who present few if any symptoms of cardiac disease but whose electrocardiogram is so manifestly abnormal that even the undiscerning are alarmed by the changes encountered. The peculiar feature of these electrocardiograms is the presence of deeply inverted T waves in records from precordial leads from all or part of the points between positions V<sub>1</sub> and V<sub>6</sub>. In this study, a correlation of the clinical and electrocardiographic findings was undertaken in 110 cases which had in common the presence of deeply inverted T waves in central terminal leads, centred about position 3 on the precordium.

The presence of deeply inverted T waves in electrocardiograms from central terminal leads centred about this position on the precordium and unattended by significant changes in the QRS complexes in tracings derived from these or other leads, could be related in 38 of 62 patients (61%) to clinical evidence of myocardial infarction or severe coronary insufficiency. A transient and reversible state of deep inversion in the T waves obtained from these same leads bears a high correlation with the presence of clinical and pathological data, supporting the diagnosis of severe coronary insufficiency or myocardial infarction.

#### Association of Hypotensive State in Myocardial Infarction with Subsequent Metabolic Responses and Mortality in Elderly Subjects.

R. A. BRUCE *et al.*: *Circulation*, 12: 207, 1955.

Hypotension occurring in patients with myocardial infarction is associated with increased mortality when shock is present. Many of these patients in shock succumb despite treatment with pressor amines. Such patients undergo severe stress, and the high mortality raises the question of the adequacy of the metabolic responses. In an effort to clarify this problem, ten patients with typical findings of acute myocardial infarction were studied for two weeks after admission to the metabolic ward of King County Hospital. Six of these patients died of myocardial infarction and terminal complications within four weeks. None of the survivors had hypotension or tachycardia, evaluated by hourly determinations, during the first three days. Systolic and pulse pressures diminished gradually in the survivors.

Surviving patients had higher mean venous pressures, circulation times and volume distribution of sodium thiosulfate initially, together with reductions in each of these factors during the second week. These changes were associated with greater loss of weight, negative sodium balance, and earlier recovery from negative potassium and nitrogen balances observed in these patients.

Dying patients exhibited a slight decrease in serum sodium concentration, renal conservation of sodium, and expansion of volume distribution of sodium thiosulfate, as well as persistently lower blood pressures.

It is concluded that the early appearance of hypotension following acute myocardial infarction presaged clinical complications and unfavourable metabolic responses as well as a fatal outcome in these patients.

S. J. SHANE

## SURGERY

### Primary Peptic Ulcerations of the Jejunum Associated with Islet Cell Tumours of the Pancreas.

R. M. ZOLLINGER AND E. H. ELLISON: *Ann. Surg.*, 142: 709, 1955.

In reporting two cases of recurrent jejunal ulceration with repeated operations to resect jejunum, stomach and vagus nerves and finally total gastrectomy, and in which non-specific islet cell tumours of the pancreas were found, an ulcerogenic humoral factor of pancreatic islet origin is postulated. Glucagon, the hyperglycaemic-glycogenolytic factor of the pancreas, is implicated. A clinical entity consisting of hypersecretion, hyperacidity and atypical peptic ulceration, associated with non-insulin-producing islet cell tumours of the pancreas, is suggested.

BURNS PLEWES

### The Pathogenesis of Acute and Chronic Pancreatitis.

S. R. POWERS, JR., H. H. BROWN AND A. STEIN: *Ann. Surg.*, 142: 690, 1955.

Experiments on dogs were done to demonstrate the activation of trypsinogen by bile. Anastomosis of the pancreatic and bile ducts and the production of sphincter of Oddi spasm by morphine regularly caused acute pancreatitis. Repeated attacks produced fibrosis and dilatation of pancreatic ducts. A method of evaluating the presence of trypsin in blood serum is described.

It is concluded that acute pancreatitis is the result of pancreatic duct obstruction plus trypsinogen activation. The obstruction may be due to duodenal spasm, sphincter of Oddi spasm or obstruction, surgical trauma, etc. Trypsin activation may be due to bile reflux, cholangitis or presence of trypsin in the blood as after extensive surgery or infarction of the spleen. Pancreatic oedema is a lesser pancreatitis and may be converted to pancreatic necrosis by the activation of trypsinogen. Treatment should be by surgical intervention to promote free pancreatic drainage.

BURNS PLEWES

### Extrahepatic Biliary Duct Obstruction Due to Stricture.

J. A. MONCRIEF: *A.M.A. Arch. Surg.*, 70: 519, 1955.

The clinical and laboratory signs of common duct ligation in dogs are well documented: bile appears in the urine in one to two days, scleral staining in five to 10 days, generalized icterus in nine to 26 days, general signs of illness in four weeks. The blood cholesterol rises in two days and lasts four to six weeks, the A/G ratio is reversed in eight weeks and serum bilirubin rises in two days. Faecal urobilinogen may persist, from excretion of blood into the bowel lumen. Prothrombin time remains normal for three to four months and then falls steadily. Nevertheless a patient who has postoperative stricture of the common bile duct is very ill and the immediate mortality is high, so that profound changes which have not been elucidated experimentally take place. Twelve such patients were studied.

Searches for a relationship between morphological changes in the liver, various laboratory test results and prognosis led nowhere in these patients. Strictures are due to operative trauma. If the damage is recognized and repaired at the time, the mortality is nil. Otherwise the individual is doomed to repeated surgical procedures and the long-term prognosis is very poor: average survival 6.1 years, and average number of operations 3.7. If it is to succeed, a mucosa-to-mucosa repair is necessary, for tubes and scar tissue almost always plug.

The survey failed to reveal a satisfactory laboratory test or combination of findings which will enable an accurate prognosis to be made. The clinical appearance of "chronically ill" is an indication of an unfavourable outcome, and clinical study is still the most significant finding.

BURNS PLEWES

### Induction of Thyroid Tumours in Rats by a Low Iodine Diet.

A. A. AXELRAD AND C. P. LEBLOND: *Cancer*, 8: 339, 1955.

Experiments carried out in the Department of Anatomy at McGill University demonstrated cytological changes in the thyroid in rats fed an iodine-deficient diet. The glands became larger and focal lesions developed. A carcinogen, 2-acetylaminofluorene, shortened the latent period for the development of thyroid nodules. Invasion of other tissues and metastases were noted. Prolonged iodine deficiency producing excessive thyrotropic hormone stimulation is said to cause hypertrophy and hyperplasia and this may proceed to neoplastic change. These tumours were produced by prolonged physiological overstimulation.

BURNS PLEWES

### A Critical Evaluation of Radical Subtotal Gastric Resection as a Definite Procedure for Antral Gastric Carcinoma.

H. W. MAYO, J. K. OWENS AND M. WEINBERG: *Ann. Surg.*, 141: 830, 1955.

The results in 194 cases of gastric carcinoma were studied to try to find out in what way the low survival rate could be improved. The over-all five-year survival rate before many gastric resections were done was 8%. Of 15 patients who had a radical subtotal resection for gastric carcinoma without lymph node metastases, 10 survived five years, but there were no such survivors in 11 cases with demonstrable lymph node involvement. It seems clear that total gastrectomy is unnecessary for antral carcinoma, but that removal of the subpyloric lymph nodes by the additional resection of the head of the pancreas and duodenum may increase the salvage rate.

Dr. Alton Ochsner in discussion of this paper at the Southern Surgical Association meeting considered that the poor results of treatment of gastric cancer can only be improved by resecting all gastric ulcers—by treating gastric carcinoma before it can be diagnosed. He also recommended abdominal exploration in men over 40 years who develop gastric symptoms for the first time, in spite of negative roentgenography, negative gastroscopy and normal gastric acidity.

BURNS PLEWES

### The Surgical Treatment of Gastrojejunal Ulceration.

W. WALTERS, D. P. CHANCE AND J. BERKSON: *A.M.A. Arch. Surg.*, 70: 826, 1955.

During the period 1945 to 1952 at the Mayo Clinic 617 operations were done on 586 patients for gastrojejunal ulcer; of these, 143 consisted of vagotomy with or without another procedure, while 158 were gastric resections. The common complications of gastrojejunal ulcer were hæmorrhage (50%), gastrojejunal fistula (6%) and perforation (0.5%). The roentgenological diagnosis was positive in only 50% of the post-gastrectomy ulcers and 37% of the post-gastroenterostomy ulcers. A barium enema is by far the best method of demonstrating a fistula into the colon.

There were excellent results in 70% of those who had a vagotomy and the operative risk was low. The results of gastric resection for stomal ulcer following gastroenterostomy were better than vagotomy, for excellent results were obtained in 87% as compared with 78%. But with ulcers following gastrectomy, re-resection was followed by a mortality of 15%, though the results among the survivors were better than after vagotomy.

The 20 cases of gastrojejunal fistula were treated without a death, by excision of the fistula and reconstruction of jejunum and colon. Most also had gastric resection or re-resection and several had vagotomy.

BURNS PLEWES

**Emergency Cervical Mediastinotomy for Massive Mediastinal Emphysema.**J. R. KYDELL AND W. K. JENNINGS: *A.M.A. Arch. Surg.*, 70: 647, 1955.

Though minor degrees of subcutaneous and mediastinal emphysema and pneumothorax are common and resolve spontaneously, a widespread degree may create an alarming situation. Such a situation may follow chest trauma or excessive straining and occasionally occurs spontaneously, or it may be due to direct perforation of the oesophagus or trachea, neck operations or retro-peritoneal air injections.

An emergency drainage of the mediastinum by a pretracheal dissection under local anaesthesia may be life-saving, in the same way that pleural drainage may save a case of tension pneumothorax. It should precede thoracotomy in these very ill patients. BURNS PLEWES

**Clinical Experiences in the Early Management of the Most Severely Injured Battle Casualties.**C. P. ARTZ *et al.*: *Ann. Surg.*, 141: 285, 1955.

This survey was carried out at a forward surgical hospital, located approximately ten miles behind the eastern front in Korea, on a group of 138 casualties treated in the last six months of the war who required from 5 to 56 pints of blood in the first 24 hours after wounding. An attempt is made to correlate such factors as types of wounds, velocity of missile, blood loss and duration of hypovolaemia with mortality, blood requirements, degree of shock, response to treatment and incidence of renal insufficiency. The tables and statistical conclusions are too numerous to quote but provide much food for thought on many problems of resuscitation of the shocked patient. This and many other articles in current literature are a tribute to the exhaustive and well-thought-out research programme that the U.S. Armed Forces Medical Corps carried out in the field.

Blood volume studies were made with red cells labelled with chromium 51, as this method was considered more accurate than the T-1824 (Evans blue dye) method. As owing to continued haemorrhage it is difficult to estimate blood volume accurately in the preoperative period, estimates were made immediately after operation. By considering what blood the patient had had and the results obtained, the blood volume could be arrived at.

Reference is made to the Renal Insufficiency Centre where cases were transferred if oliguria seemed to warrant further investigation or treatment. This hospital, located well behind the line and accessible by helicopter from all forward surgical hospitals, was most elaborately equipped with laboratory aids and well-trained personnel, including those to run the artificial kidney.

Although older and more conventional modes of casualty transport will always be used for the majority of war wounded, many patients in Korea would not have lived had it not been for selective helicopter evacuation.

ALLAN M. DAVIDSON

**The Management of Bleeding Oesophageal Varices Associated with Cirrhosis of the Liver.**J. E. HAMILTON: *Ann. Surg.*, 141: 637, 1955.

Consideration of the pathogenesis of portal obstruction should lead to its proper treatment, but there are several schools of thought on the subject. The theory that portal obstruction in cirrhosis is due to arterio-venous shunts before the sinusoids has led to ligation of the hepatic and splenic arteries. If the obstruction to portal flow is mechanical from contraction of periportal scar tissue, a portal-systemic shunt should reduce portal hypertension and the bleeding hazard. Obstruction of venous outflow would be treated by trying to create collateral circulation between the portal and systemic circulations.

Double balloon tamponade is used in alarming oesophageal bleeding that does not respond to bed rest and

transfusion, but it is not always effective and hospital mortality is often high. If it is not rapidly effective, trans-thoracic oesophagotomy and direct ligation of the bleeding varix are recommended.

Arterial ligation has been disappointing in the control of bleeding oesophageal varices. Portocaval shunts and spleno-renal shunts have proved more effective, but there is a mortality of between 25 and 50%. BURNS PLEWES

**OBSTETRICS AND GYNÆCOLOGY****Prolonged Pregnancy.**G. B. GIBSON: *Brit. M. J.*, 2: 715, 1955.

Case reports were obtained from 5,000 patients by means of a personal interview during the first week of the puerperium. These reports showed that in 53.1% of single vertex presentations labour began spontaneously during the 40th or 41st week of pregnancy. In 7.4% the pregnancy was prolonged for more than 14 days after the estimated date of confinement. There was no relationship between the length of the menstrual cycle and the duration of pregnancy, provided the cycle was not unduly prolonged. There was an increase of fetal mortality to 5.1% if pregnancy was prolonged for more than 14 days after the estimated date of confinement. It is suggested that this mortality results from fetal anoxia *in utero*. By reference to a series of 564 stillbirths this fetal anoxia was mainly a risk occurring during the first and second stages of labour. Induction of labour did not appear to be the best means of combating this risk. A policy of "masterful inactivity" is advocated until labour starts spontaneously. Then the strictest watch for fetal distress is indicated, with resource to Caesarean section at once in cases in which it occurs. ROSS MITCHELL

**Gynecography Simplified.**H. A. STRAUSS AND M. R. COHEN: *Am. J. Obst. & Gynec.*, 70: 572, 1955.

A simplified method of gynecography utilizing standard x-ray equipment is presented. This method of visualization of the internal genitals by means of pneumoperitoneum with or without iodized oil can be mastered easily. The technique is simple and safe, and diagnostically of the greatest importance since it reveals otherwise obscure pelvic abnormality. It may be performed easily in any hospital or in any x-ray laboratory where standard x-ray equipment is available. ROSS MITCHELL

**Fetal Distress and Intra-partum Fetal Death.**T. B. FITZGERALD AND C. N. MCFARLANE: *Brit. M. J.*, 2: 358, 1955.

Two hundred and six cases of fetal distress extracted from 3,168 hospital deliveries were detected without special instruments or training during the routine care of patients by the midwifery staff.

Possible predisposing factors—age, parity, toxæmia, maturity and ante-partum bleeding—are subjected to statistical examination. The signs of fetal distress during labour are analysed for their individual significance and for their significance when they occur in certain sequences. Treatment and its results are described and discussed; the advantages of active intervention in many cases are suggested.

Suggestions are made—continuous recording fetal phonocardiography or electrocardiography—for progress towards more rapid and accurate diagnosis with a resultant improvement in treatment and results.

ROSS MITCHELL

## THERAPEUTICS

### Treatment of Angina Pectoris with a Nitroglycerin Ointment.

J. A. DAVIS AND B. H. WIESEL: *Am. J. M. Sc.*, 230: 259, 1955.

A series of 17 patients with angina pectoris was treated with a 2% nitroglycerin ointment in addition to usual measures. Nine of these patients showed a decrease in the number of attacks; 4 patients had no apparent decrease in the number of attacks but had a general feeling of well-being; 4 patients showed no response. This measure is suggested as an adjuvant in the management of coronary insufficiency. The principle of slower absorption with resulting prolonged action of an effective coronary vasodilator would seem to deserve further trial in this condition. The observation that sudden withdrawal of this ointment has produced more severe coronary insufficiency indicates to the authors that there is a marked vasodilating effect and that, when it is employed, caution must be observed in sudden withdrawal because of the danger of inducing acute coronary insufficiency or an actual myocardial infarction. S. J. SHANE

### Use of Penterythritol Tetranitrate in Chronic Coronary Insufficiency.

H. N. ROSENBERG AND A. L. MICHELSON: *Am. J. M. Sc.*, 230: 254, 1955.

Effects of penterythritol tetranitrate in the dosage of 20-30 mg. four times a day were studied by the double-blind technique during six months.

Five (25%) patients showed significant improvement, indicating a definite need for the drug. Eleven (55%) patients expressed favourable opinions, but when their replies were analyzed statistically, they proved equivocal.

Dosage of 30 mg. four times a day appeared to be more effective in 3 (15%) patients, but side-effects prevented continuation of the drug in 2 of these. Side-effects were absent in all patients on the dosage of 20 mg. four times a day. A lag in therapeutic effect of from three to seven days after the drug was started was seen in 50% of patients; also a carry-over of effect after omission of from one to two days was noted.

The authors conclude that penterythritol tetranitrate was of decided value in the treatment of 25% of patients with chronic coronary insufficiency. They feel that this drug should be considered seriously as a positive addition to the pharmacological treatment of angina pectoris; and that in some patients penterythritol tetranitrate may mean the difference between complete, or almost complete, absence of symptoms and a prolonged illness with much suffering. S. J. SHANE

## DERMATOLOGY

### Studies on the Percutaneous Absorption of Fludrocortisone (9a-fluorohydrocortisone).

C. S. LIVINGOOD *et al.*: *A.M.A. Arch. Dermat. & Syph.*, 72: 313, 1955.

This report covers clinical and experimental data on 11 hospitalized patients who had various types of dermatitis treated with 0.1% and 0.2% Fludrocortisone lotion and/or ointment. Comparable data were obtained on two volunteers who had normal skin.

The authors found that percutaneous absorption of the drug did occur. This absorption was manifested by decreased urinary sodium secretion, weight gain, and oedema. Absorption was greater with the lotion. A probable "safe" daily dose was found to be 2-6 mg. in lotion form and 5-12 mg. in ointment form. However, even with these quantities there were signs of percutaneous absorption when the drug was applied to perianal or vulvar areas. Denuded epidermis allowed more absorption, and as the dermatitis improved the absorption decreased. Per-

cutaneous absorption occurred in one of the two volunteers.

The authors conclude that Fludrocortisone should not be used indiscriminately. When it is used, patients should be checked regularly for weight gain and oedema. It should not be used in patients who have hypertension, toxæmia of pregnancy, congestive heart failure or nephritis.

In the discussion, Dr. Marion B. Sulzberger poses the following question: "Therefore, if Fludrocortisone is no cheaper, no more effective and no more pleasant to use topically than hydrocortisone, and if external use of Fludrocortisone introduces a real systemic risk not present in the external application of hydrocortisone, we must ask what are the arguments in favour of its continued topical use?" R. JACKSON

### Tumours of Testis with Cutaneous Metastases to Scalp.

B. L. SCHIFF: *A.M.A. Arch. Dermat. & Syph.*, 71: 465, 1955.

Cutaneous metastases, limited to the scalp, are reported in two cases of testicular tumour (both seminomas). The metastases were seen as nodules from 2-12 cm. in diameter. They were non-tender, and were not attached to the skin. The overlying skin was thin but there was no alopecia. In both cases the onset of the nodules was sudden. In one case the metastatic tumour of the scalp was the first clue to the presence of a primary malignant tumour in the testis. ROBERT JACKSON

### Varicose Eczema and Varicose Ulcer.

G. A. G. PETERKIN: *Practitioner*, 175: 276, 1955.

The author regards varicose eczema as a post-traumatic infective eczema located on an area of skin devitalized by an inefficient circulation. The original trauma is usually scratching, but it may be a blow. The skin is very easily made sensitive to infecting organisms or to applied medicaments which may cause absorption phenomena (loosely called "ids") in other parts of the body. Every rash which occurs on the lower legs is not varicose eczema. Contact dermatitis, lichen simplex chronicus, lichen planus and fungus infections must all be excluded.

Investigation and treatment, if possible, of an inefficient venous system should be carried out by a surgeon. Open wet dressings of 0.25-0.5% silver nitrate or lead subacetate solution (5%) are used in the initial stage. These are kept wet all day and night. Later, Lassar's paste followed still later by 0.5% crude coal tar in Lassar's paste may be used. The quinolone derivatives (such as Vioform or Sterosan) are useful where infection appears to be predominant. Antibiotic ointments are to be used only with great caution.

The author discusses the various factors which may play a role in the formation of varicose ulcer. These include heredity, thrombophlebitis, trauma, occupation, obesity, vascular disease and sex hormones. All ulcers on the lower leg are not varicose ulcers. If the ulcer is on the skin above or below the medial or lateral malleoli, then it is most likely a varicose ulcer. Ulcers on the shin or calf must be viewed with suspicion. Other lesions are those ulcers associated with blood dyscrasias, ecthyma, tuberculous ulcers, syphilitic gummas, erythema induratum, nodular vasculitis, squamous cell carcinoma or drug eruptions. Many leg ulcers are due to arterial disease.

Treatment consists primarily of support to the leg and bed rest. Most cases seem to require hospitalization to secure adequate rest. The author favours the elastic web bandage or the Unna boot for support. Local applications such as those outlined for varicose eczema can be used. Tar is not indicated. Antibiotic ointments are not necessary and may cause contact dermatitis. Large deep ulcers may require complete excision with full thickness grafting, but in most cases a pinch or razor graft after cleaning the ulcer gives a good result. ROBERT JACKSON

## INDUSTRIAL MEDICINE

## Accident Syndrome . . . A Clinical Approach.

M. S. SCHULZINGER: *A.M.A. Arch. Indust. Health*, 11: 66, 1955.

That the widely accepted theory attributing most accidents to a small fixed group of "accident-prone" individuals is questionable, is suggested by this article. In it accidents are viewed as a widespread endemic affliction, and "the 15% of the population that causes 85% of the accidents" is conceived as a shifting group, with new persons constantly joining and leaving. This conception of accidents as a disease syndrome replaces the essentially fatalistic concept of "accident proneness" by a more hopeful theory of accident causation.

The author presents his findings from a 20-year study of 35,000 accidents (27,000 industrial and 8,000 non-industrial) treated in private practice in a large mid-western community. Tables and graphs are included.

Case histories were carefully studied. Detailed analysis of the data yielded much information—confirmation and refutations of some old theories, and new facts. The more important and pertinent findings are summarized in definite statements of the influence of the following factors: age, sex, season, month, hour, manner, type, frequency, anatomical distribution of injuries, and emotional strain. It is indicated that circumstances attending the causation of an accident follow a pattern and lend themselves to the formulation of a syndrome.

After discussing the evidence presented by this analysis and that derived through experience, the author describes the accident syndrome as a morbid condition in which the following elements combine to determine or influence the occurrence of the accident: (1) universal risk; (2) abnormal environment; (3) maladjustment and irresponsibility; (4) a trigger episode; and (5) behaviour in presence of the trigger episode. The chief component is the mental maladjustment of the accident victim.

In the author's opinion, viewing accidents as a clinical entity and not merely as a problem in "safety" tends to greater effectiveness in preventive efforts. Physicians should assume their full share of responsibility for diagnosing and treating the physical, mental and emotional disorders which play a part. Research, education and "safety" should be reoriented toward recognition of the "syndrome" concept.

MARGARET H. WILTON

## Rehabilitation of the Cardiac Patient in Industry.

H. N. SEGALL: *Occup. Health Rev.*, 6: 1, 1954.

In the rehabilitation of the cardiac patient in industry, the ultimate success of the plan is directly related to co-operation of the employer and the employees with the physician. Of these the physician has the responsible role. He acts as leader and co-ordinator in the task of appraising fitness for work and in the selection of a suitable job. In this article the author indicates the necessity of treating each case separately. One diagnostic label may describe the pathological lesion in many individuals, but with respect to fitness for work, each of these persons may belong to a different category. In order therefore to assess the degree of impairment of cardiac function and the measurement of productive capacity of an individual, recognition of the various degrees of abnormality represented by a particular diagnostic label is required.

The author presents this problem as it relates to various forms of heart disease, referring frequently to cases from his own experience. He draws attention to the obvious signs as first noted, to the immediate and the ultimate prognosis, to the means of deducing fitness for work and to the policy to be followed in handling these cases. Those conditions discussed include: congenital heart disease, rheumatic heart disease, thyrotoxic heart disease, syphilitic heart disease, hypertension, coronary heart disease, and iatrogenic heart disease.

In cases of congenital cardiac anomalies he differentiates between those without and those with cyanosis. The former should not be rejected at the pre-employment examination, but should be guided into jobs requiring little physical exertion. The latter are unfit for ordinary conditions of employment. In cases of severe rheumatic heart disease as well as in those with only a moderate or slight degree of impairment, it seems justifiable to advise: (1) a job which does not involve heavy work or exposure to bad weather, and (2) a full life, practising moderation both at work and at play.

The most common and least understood form of cardiovascular disease is that related to hypertension; good judgment is essential to the handling of each case. Those patients who show no evidence of disease in heart, brain or kidneys should be allowed to continue at usual occupations.

Motivation plays a dominant role in the progress of the patient with coronary heart disease. There is little if any direct relation between work and the cause of coronary artery occlusion. Telling the patient that after the usual period of rest he will return to his usual job is very effective in relieving anxiety and in preventing cardiac neurosis.

Reference is made also to iatrogenic heart disease and the role of the physician in its careful handling.

MARGARET H. WILTON

## Cutting Oils and Squamous-Cell Carcinoma. Part I. Incidence in a Plant with a Report of Six Cases.

E. MASTROMATTEO: *Brit. J. Indust. Med.*, 12: 240, 1955.

A possible relationship between the occurrence of squamous-cell carcinoma and long-continued occupation as a machine operator is suggested by the observations presented in this article. Exposure to cutting oils is likely to be the important factor. Six cases of squamous-cell carcinoma of the skin and one of papilloma are reported among workers at a machine-operating plant, in operation since before 1920. Details of the case reports are presented together with observations on these and on the incidence rates during a 10-year period from 1945 to 1954.

Analysis of the data showed: (1) the age at onset of the six cases was from 37 to 59 years with an average age of 51; (2) for five of the patients the average period of exposure was 21 years; (3) the exposed skin of the hand and forearm was involved in five of the six cases of carcinoma; (4) automatic machine workers, who comprised about 5% of the machine operators, made up from one-third to one-half of the patients with carcinoma.

Comparison with the incidence of skin cancer in workers in other machine-operating plants is not possible as no figures are available. It is, however, possible to compare the incidence with that in other males as indicated in various recent studies. Tables present this comparison. Included in the discussion are the rates for North American males as revealed by recent investigation, and the occurrence of epitheliomata in gas and tar production workers in Great Britain. Reference is made also to 340 cases of mineral oil epitheliomatous ulceration recorded in England and Wales in the 10 years 1943-1952 as reported annually by the Chief Inspector of Factories. In eight of these reports a complete breakdown by occupational group is given and some 16 cases can be found which can be classified as affecting machine operators.

The crude incidence of skin carcinoma revealed in the present study is not remarkable, compared with that of all other groups noted. In the author's opinion, however, when allowance is made for age, for the site affected, and for the geographic region, a possible relationship between the disease and the occupation seems obvious.

MARGARET H. WILTON

## **HOUSING APPLICATION FORM**

89th Annual Meeting, C.M.A.

Quebec, June 11 - 15, 1956

DR. R. GINGRAS,  
CHAIRMAN, COMMITTEE ON HOUSING, C.M.A.,  
LAVAL MEDICAL SCHOOL,  
QUEBEC CITY, QUEBEC.

I am planning to attend the Annual Meeting of the Canadian Medical Association in Quebec City, June 11 to 15, 1956.

Will you please reserve the following:

----- Double room with bath or shower (double bed).  
----- Double room with bath or shower (twin beds).  
----- Room for ----- persons (private bath, or shower).  
----- Motel unit for ----- persons (bath or shower).

In view of the large attendance expected, the hotels have no single rooms available. It might be to your advantage to share a room with another member. Please mention below the name of the party with whom you would like to share your accommodation, otherwise assignment will be made by the Housing Committee.

Name -----

Names of persons who will occupy the accommodation requested above:

NAMES (Dr. and Mrs.): -----

ADDRESS: -----

I (we) expect to arrive in Quebec on ----- June the -----

----- in the afternoon (before 6.00 p.m.) ----- in the evening (after 6.00 p.m.)

Travelling by: ----- Automobile; ----- Train; ----- Air; ----- Bus.

My choice of accommodation is listed below. (Check in order of preference 1, 2 and 3.)

### **HOTELS:**

----- CHATEAU FRONTENAC	(\$12.00 to \$20.00 for two persons)
----- CLARENDON HOTEL	(\$11.00 to \$12.00 " " )
----- HOTEL ST. LOUIS	( \$8.00 " " )
----- HOTEL VICTORIA	(\$10.00 to \$12.00 " " )
----- CHATEAU LAURIER	( \$8.50 to \$10.00 " " )

### **MOTELS:**

----- AUBERGE DU BOULEVARD LAURIER	( \$4.00 to \$5.00 per person)
----- MOTEL DU PONT	( \$4.00 to \$5.00 " )
----- QUEBEC MOTOR COURT	( \$4.00 to \$5.00 " )
----- L'HABITATION	( \$5.00 " )
----- AUBERGE DES 4 CHEMINS	( \$5.00 to \$6.00 " )
----- MOTEL DES LAURENTIDES	( \$6.00 " )
----- MOTEL HELEN'S	( \$3.00 " )
----- A B MOTEL	( \$3.00 " )

### **TOURIST HOMES:**

Near Château Frontenac.

First-class rooms with or without bath (\$3.00 to \$10.00 per person).

**FORMULE DE RESERVATIONS**

89ème Réunion annuelle du A.M.C.

- Québec, du 11 au 15 juin 1956

DR. R. GINGRAS,  
PRÉSIDENT,  
COMITÉ DES RÉSERVATIONS, A.M.C.,  
UNIVERSITÉ LAVAL DE QUÉBEC,  
FACULTÉ DE MÉDECINE,  
QUÉBEC, P.Q.

Je me propose d'assister à la 89ème réunion annuelle du A.M.C. qui aura lieu à Québec du 11 au 15 juin 1956.

Prière de bien vouloir faire les réservations suivantes:

- .....Chambre avec bain, ou douche (lit double).  
 .....Chambre pour deux personnes, avec bain ou douche (lits-jumeaux).  
 .....Chambre pour.....personnes (bain ou douche).  
 .....Cabines pour.....personnes (bain ou douche).

Vu le nombre imposant d'invités qui participeront à ces assises, les hôteliers nous prient de noter qu'ils ne pourront nous offrir des chambres simples. Sans doute trouverez-vous avantage à partager une chambre avec un confrère. Si tel est votre désir, vous voudrez bien mentionner ci-dessous le nom de la personne avec laquelle vous voulez faire cet arrangement. Si aucun nom n'est indiqué, le Comité de Réservations procédera alors lui-même à la répartition des chambres.

Nom.....

Noms des personnes occupant les chambres mentionnées ci-haut:

NOMS (Dr et Mme).....

ADRESSE.....

J'arriverai à Québec.....le.....juin.....

vers.....h. de l'après-midi (avant 6.00 p.m.) vers.....h. du soir (après 6.00 p.m.)

Moyen de locomotion: Automobile.....Train.....Avion.....Autobus.....

Mon choix d'hôtel est indiqué ci-dessous dans l'ordre de préférence:

**HOTELS:**

..... CHATEAU FRONTENAC	(\$12.00 à \$20.00 pour deux personnes)
..... HOTEL CLARENDON	(\$11.00 à \$12.00 " " " )
..... HOTEL ST. LOUIS	(\$ 8.00 " " " )
..... HOTEL VICTORIA	(\$10.00 à \$12.00 " " " )
..... CHATEAU LAURIER	(\$ 8.50 à \$10.00 " " " )

**MOTELS:**

..... AUBERGE DU BOULEVARD LAURIER	(\$4.00 à \$5.00 par personne)
..... MOTEL DU PONT	(\$4.00 à \$5.00 " )
..... QUEBEC MOTOR COURT	(\$4.00 à \$5.00 " )
..... L'HABITATION	(\$5.00 " )
..... AUBERGE DES QUATRE CHEMINS	(\$5.00 à \$6.00 " )
..... MOTEL DES LAURENTIDES	(\$6.00 " )
..... MOTEL HELEN'S	(\$3.00 " )
..... A B MOTEL	(\$3.00 " )

**MAISON TOURISTE:**

Près du Château Frontenac.

Chambre première-classe avec ou sans salle de bain (\$3.00 à \$10.00 par personne).

## PROVINCIAL NEWS

### SASKATCHEWAN

As has been mentioned previously in these columns, the Regina Rural Region electors registered a three-to-one opposition to a plan of prepaid medical care which would have involved financing by personal tax (\$24 a year for an adult, \$47 for a family of two, \$49 for a family of three and \$50 for a family of four or more).

The Assiniboia-Gravelbourg regional board had not worked out its proposal as definitely. To the question whether or not electors desired prepaid medical services established in the region, electors replied six to one in the negative. Another question—as to which method of tax support was preferred, a personal one or a combination of personal and land tax—elicited substantial support for the personal tax. This second expression of opinion, while it may only be of academic interest since the basic proposal was rejected, would suggest that the farmer has come to the conclusion that his land is being required to carry too great a burden.

In commenting, the *Regina Leader Post* of December 1 states: "There inevitably will be a tendency to construe the overwhelming rejection of prepaid medical services in the two regions as a setback for the Saskatchewan government, the most ardent advocate among all the provincial governments for a national health insurance plan. To an extent, this appears to be a correct assessment of the situation, even though the government did not apparently take a direct hand in the campaign which preceded the voting. Outwardly at least, the decision to refer this matter to the electors was made by the Boards in the respective regions. However, these results coupled with the slow progress the government has made in selling its regional health system to the public are indicative of a lack of enthusiasm among the people for this health regimentation.

"About ten years ago the Province of Saskatchewan was divided into 14 prospective health regions. To date eight have been established and only one of these, Health Region No. 1 (where Swift Current is located), has prepaid medical services. Efforts have been made in the past to further the establishment of other health regions and to make progress in the completion along the regional planning idea, but the unenthusiastic response of the people so far has not led to the completion of the original concept."

In commenting further, the *Leader Post* has this to say: "While the present uncertainty with respect to the wheat outlook may have been a factor in the voting last month in the Regina Rural and Assiniboia-Gravelbourg regions, this has been only a comparatively recent obstacle to the full flowering of the decade-old province-wide regional health organization.

"The situation lends itself to several interpretations. Perhaps the rural people are stubbornly opposed to additional regimentation which they tend to view with suspicion since it is sought by a socialist government.

"Again, it may be that awareness is beginning to dawn of the fundamental truth that no governmental service is free, that they all have to be paid for by the taxpayer. In addition to all the normal taxes they have to pay, the Swift Current health region ratepayers pay a land tax of 2.2 mills and personal taxes (\$18 for each adult with a \$44 family maximum) to support their prepaid services. Also, it is not to be forgotten that when the "free" province-wide hospitalization scheme was launched it was to be financed by a modest annual charge of \$5.00 per person with a \$30 family maximum. The individual hospitalization tax now is \$15, the family maximum \$40 and on their every taxable purchase the people of the province pay an extra one per cent in provincial sales tax to support the hospitalization plan. Even with these extra levies, the treasury will have to provide an estimated \$5,000,000 to cover this year's deficit.

"Instead of costing a paltry \$5,000,000, as promised initially, the hospitalization plan represents a financial burden of approximately \$18,000,000 on the people—more than half the entire costs of provincial government in the year before the C.C.F. took office.

"In the Regina Rural region, it is estimated that more than half the people already were covered by some form of prepaid medical protection. Some municipalities had their own arrangements with the medical profession. In other areas, the people were covered extensively under group medical schemes. It seems to be a reasonable assumption that one factor in the adverse vote in this region was the conviction that prepaid medical services could be provided satisfactorily and more economically in these ways without the erection of a grandiose—and costly—regional structure."

Dr. David M. Baltzan of Saskatoon was honoured by the Canadian Council of Christians and Jews in Calgary when he received the human relations award in December, at that body's annual banquet. The presentation was made by Mr. G. Max Bell, publisher of the *Calgary Albertan*.

The award was conferred on Dr. Baltzan for "his outstanding contributions in promoting understanding and co-operation among the people of Canada". "Eminently successful and influential," stated the citation accompanying the award, "he has maintained the friendly touch demonstrating the brotherhood of man under the fatherhood of God, not only by practising it in his personal relations but by inspiring others to do so. He has believed in brotherhood and lived it."

Dr. Baltzan, addressing the banquet, urged council members to extend their efforts to the promotion of world fellowship rather than the narrower conception of brotherhood between Christians and Jews.

G. W. PEACOCK

### MANITOBA

Crystal City is to have a new hospital with accommodation for 16 patients, six babies, eight nurses' beds, and x-ray and laboratory facilities.

Swan Lake has been allotted a federal health grant of \$20,876 towards the building of the new Lorne Memorial medical nursing unit.

Victoria Hospital, Winnipeg, has received a federal health grant of \$48,966 towards construction of a nurses' residence.

ROSS MITCHELL

### NOVA SCOTIA

Dalhousie University is now conducting a \$3,500,000 expansion campaign. Part of this sum will be used to provide a new department of dentistry and needed medical facilities. Because of the present school population, a marked increase in university enrolment by 1960 is anticipated. It is the confident hope that public-minded citizens will help the university to fulfil its obligations.

The Post-Graduate Committee of the Faculty of Medicine in co-operation with the Department of Obstetrics and Gynaecology and the Department of Paediatrics presented a course from Nov. 28 to Dec. 2. Many outside physicians attended. Although the subjects discussed are, for the most part, those of the specialties concerned, some opportunity is given at the post-graduate course to hear speakers from other departments of the hospital.

Acadia University Board of Governors has honoured Dr. Avery DeWitt of Wolfville, on the occasion of his retirement from the post of University physician. A dinner was given to Dr. and Mrs. DeWitt, at which Dr. Watson Kirkconnell was master of ceremonies; the popular couple were presented with gifts.

Dalhousie University is pleased to announce the appointment of Dr. R. C. Dickson, formerly of Toronto, as Professor of Medicine. He succeeds Dr. C. W. Holland, who retired from the chair of medicine two years ago. We understand that Dr. Dickson is an ardent yachtsman, and we are certain that he will find ample opportunity of pursuing this sport in our coastal waters.

Dr. C. E. van Rooyen has been appointed Professor of Bacteriology and Associate Provincial Bacteriologist at Dalhousie University. Dr. van Rooyen is a well-known scientist who has been very active in the newer field of virology. As a research member of the Connaught Medical Research Laboratories he contributed a great deal towards the development of the poliomyelitis vaccine.

The following addresses were given throughout the Maritimes under the auspices of the Post-Graduate Committee of Medicine:

Dr. Benjamin Tenney was guest lecturer on September 26 and 27 in Halifax, and on September 28 in Yarmouth at a meeting of the Western Nova Scotia Medical Society. In Halifax he spoke on "The Importance of Good Obstetrics" and "Bleeding in Obstetrics"; in Yarmouth his address was on "Bleeding in Pregnancy".

On November 18, Dr. T. M. Sieniewicz visited Cape Breton and addressed the Cape Breton Medical Society on "Diagnosis and Treatment of Pulmonary Disease".

On November 23, Dr. N. G. B. McLetchie spoke before the Prince Edward Island Medical Society and on November 24 in Saint John, N.B. His subject was "Rheumatic and Para-rheumatic Diseases including Nephrosis".

On November 17 Dr. W. A. Taylor and Dr. J. E. Stapleton spoke at the Windsor Hospital on "Radio-sensitivity of Tumours" and "Present-day Methods of Treatment by Radiation".

On November 16, Dr. N. H. Gosse spoke in Corner Brook, Nfld., on "Conditions About the Anus" and "Breast Conditions"; on November 17 he visited Grand Falls and on November 19 spoke in St. John's on "Breast Conditions".

The Provincial Minister of Health has announced the appointment of Dr. Stuart Manchester as Chief Radiologist to the Victoria General Hospital. He succeeds Dr. W. Roy, now of Toronto. Dr. Manchester comes to us well qualified, having received his early training while a staff member at Bellevue Hospital, New York.

The recently formed Medico-Legal Society held their first meeting on December 1. The President, Dr. V. O. Mader, was in the chair. The society plans four meetings annually. The subjects discussed at these meetings should prove of interest to both the medical and the legal professions. WALTER K. HOUSE

## CANADIAN ARMED FORCES

Surgeon Commander J. W. Rogers, M.D., D.P.H., C.D., R.C.N., successfully completed the examinations for certification in public health.

Surgeon Lieutenant Commander H. D. MacWilliam, M.D., C.M., R.C.N., completed training in otolaryngology at the Royal Victoria Hospital, Montreal, and successfully completed the examinations for certification in otolaryngology.

Surgeon Lieutenant Commander D. A. Maciver, M.B., Ch.B., R.C.N., successfully completed the examinations for certification in surgery following a refresher course in the University of Toronto.

## FORTHCOMING MEETINGS

### CANADA

CANADIAN PUBLIC HEALTH ASSOCIATION, 44th annual meeting, Admiral Beatty Hotel, Saint John, New Brunswick. (Dr. G. W. O. Moss, Honorary Secretary, 150 College St., Toronto 5, Ont.) May 29-31, 1956.

SOCIETY OF OBSTETRICIANS AND GYNÆCOLOGISTS OF CANADA—1956 Annual Meeting, Manoir Richelieu, Murray Bay, Quebec. (Dr. F. P. McInnis, Secretary, Society of Obstetricians and Gynæcologists of Canada, 1230 Avenue Road, Toronto, Ont.) June 8-10, 1956.

CANADIAN MEDICAL ASSOCIATION, 89th Annual Meeting, Ecole de Commerce, Quebec, Quebec. (Dr. A. D. Kelly, General Secretary, Canadian Medical Association, 150 St. George Street, Toronto 5, Ont.) June 11-15, 1956.

### UNITED STATES

AMERICAN ACADEMY OF GENERAL PRACTICE, Eighth Annual Scientific Assembly, Washington. (Mac F. Cahal, A.A.G.P., Broadway at 34 Street, Kansas City 11, Missouri.) March 19-22, 1956.

INTERNATIONAL COLLEGE OF SURGEONS, San Jose, California. (Secretariat, U.S. Section, I.C.S., 1516 North Lake Shore Drive, Chicago 10, Ill.) March 22-23, 1956.

AMERICAN PSYCHOSOMATIC SOCIETY, 13th Annual Meeting, Sheraton-Plaza Hotel, Boston, Massachusetts. (Dr. S. Cobb, Chairman, Programme Committee, 551 Madison Avenue, New York 22, N.Y.) March 24-25, 1956.

INTERNATIONAL ANÆSTHESIA RESEARCH SOCIETY CONGRESS, Flamingo Hotel, Miami Beach, Florida. (Dr. T. H. Seldon, Mayo Clinic, Section on Anæsthesiology, Rochester, Minn.) April 9-12, 1956.

INTERNATIONAL ACADEMY OF PATHOLOGY, 45th Annual Meeting, Cincinnati, Ohio. (Central Office, Armed Forces Institute of Pathology, Seventh Street and Independence Avenue S.W., Washington 25, D.C.) April 24-25, 1956.

AMERICAN GASTROENTEROLOGICAL ASSOCIATION, Annual Meeting, Atlantic City, New Jersey. (The Secretary, A.G.A., University Hospital, Ann Arbor, Michigan.) April 27-28, 1956.

NATIONAL TUBERCULOSIS ASSOCIATION: AMERICAN TRUDEAU SOCIETY, Statler Hotel, New York, N.Y. (N.T.A., 1790 Broadway, New York 19, N.Y.) May 20-24, 1956.

SECOND INTERNATIONAL CONGRESS ON PHYSIOTHERAPY, New York, N.Y. (Miss M. Elson, American Physical Therapy Association, 1790 Broadway, New York, N.Y.) June 17-23, 1956.

WORLD CONFEDERATION FOR PHYSICAL THERAPY, Second International Congress, New York, N.Y. (Miss M. J. Neilson, Secretary-General, c/o Chartered Society of Physiotherapy, Tavistock House South, Tavistock Square, London, W.C.1, England.) June 17-23, 1956.

SOCIETY OF NUCLEAR MEDICINE, Hotel Utah, Salt Lake City, Utah. (Secretary, Dr. R. G. Moffat, 2656 Heather Street, Vancouver 9, B.C., Canada) June 21-23, 1956.

AMERICAN COLLEGE OF SURGEONS, 42nd Annual Clinical Congress, San Francisco, California. (Edward G. Sandrok, Assistant Director, A.C.S., 40 East Erie Street, Chicago 11, Ill.) October 7-12, 1956.

#### OTHER COUNTRIES

THE THORACIC SOCIETY, London, England. (Dr. Kenneth Robson, 72 Harley House, Regent's Park, London N.W.1, England.) February 24-25, 1956.

THE PHYSIOLOGICAL SOCIETY, St. Mary's Hospital, London, England. (Professor A. A. Harper, Department of Physiology, Medical School, King's College, Newcastle-upon-Tyne 1, England.) February 24-25, 1956.

PAN AMERICAN MEDICAL WOMEN'S ALLIANCE, Fifth Congress, Santiago and Vina del Mar, Chile. (Dr. Eva F. Dodge, Secretary, 2124 West 11 Street, Little Rock, Arkansas.) March 6-14, 1956.

SECOND INTERNATIONAL CONGRESS OF RADIOGRAPHY, Paris, France. (Secretariat, S.I.C.R., Via Nazionale 200, Rome, Italy.) April 4-8, 1956.

ASSOCIATION OF CLINICAL PATHOLOGISTS, Cheltenham, England. (Dr. W. H. McMenemey, Maida Vale Hospital for Nervous Diseases, London W. 9, England.) April 7-9, 1956.

FIFTH PAN AMERICAN CONGRESS OF OTO-RHINO-LARYNGOLOGY AND BRONCHO-ESOPHAGOGY, San Juan, Puerto Rico. (Dr. C. E. Munoz MacCormick, Apartado 9111, Santurce 29, Puerto Rico.) April 8-12, 1956.

NATIONAL ASSOCIATION FOR MENTAL HEALTH, Annual Meeting, Harrogate, England. (Miss Applebey, O.B.E., 39 Queen Anne Street, London W.1, England.) April 12-13, 1956.

INTERNATIONAL CONGRESS FOR THE SOCIAL REHABILITATION OF THE LEPER, Rome, Italy. (M. F. Sarsale, International Congress for the Rehabilitation of the Leper, Via Condotti, Palazzo Malta, Rome.) April 16-18, 1956.

ASSOCIATION OF SURGEONS OF GREAT BRITAIN AND IRELAND, Annual Meeting, London, England. (The Secretary, 45 Lincoln's Inn Fields, London W.C.2, England.) April 19-21, 1956.

ROYAL SOCIETY FOR THE PROMOTION OF HEALTH, Annual Congress, Blackpool, England. (Mr. P. Arthur Wells, R.S.P.H., 90 Buckingham Palace Road, London S. W. 1, England.) April 24-27, 1956.

LATIN SOCIETY OF OPHTHALMOLOGY, Second Congress, Madrid, Spain. (Dr. Costi, Montalban 3, Madrid.) April 24-28, 1956.

BRITISH PÆDIATRIC ASSOCIATION, Annual Meeting, Windermere, England. (Dr. P. R. Evans, Institute for Child Health, Great Ormond Street, London W.C. 1, England.) April 25-27, 1956.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM, Annual Congress, London, England. (The Secretary, O.S.U.K., 45 Lincoln's Inn Fields, London, W.C. 2) April 26-28, 1956.

INTERNATIONAL UNION FOR PUBLIC HEALTH EDUCATION, Third Conference, Rome, Italy. (M. Lucien Viborel, Secretary-General, 92 rue St. Denis, Paris 1er, France.) April 27-May 5, 1956.

INTERNATIONAL FERTILITY ASSOCIATION, SECOND WORLD CONGRESS, Naples, Italy. (Prof. G. Tesauo, President of Committee Arrangements, S. Andrea delle Dame, 19, Naples.) May 1956.

## BOOK REVIEWS

**DIFFERENTIAL DIAGNOSIS.** The Interpretation of Clinical Evidence. A. M. Harvey, Professor of Medicine and Head of the Department of Internal Medicine, The Johns Hopkins University School of Medicine, Baltimore, Md., and J. Bordley III, Director, Mary Imogene Bassett Hospital, Cooperstown, N.Y. 665 pp. W. B. Saunders Company, Philadelphia and London, 1955. \$11.00.

This book presents a complete, well-organized, synthetic approach to diagnosis, by authors of wide experience. It could prove of much benefit to those faced with a particular clinical problem. It was not meant to be read as a textbook, but is instructive and interesting in small doses as a bedside reader.

**SELECTION OF ANESTHESIA.** The Physiological and Pharmacological Basis. J. Adriani, Clinical Professor of Surgery and Pharmacology, School of Medicine, Louisiana State University, New Orleans. 327 pp. Illust. Charles C Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1955, \$7.25.

Dr. Adriani now presents us with a further work on anaesthesia. This volume contains all the sections of a standard text, but the classical arrangement of signs, techniques, complications and so forth is organized in a manner in which the importance of their relationship to physiology and pathology is the critical factor. This is an ideal arrangement, though not original. Previous but perhaps more limited textbooks have embodied this principle, of the "Goodman & Gilman" type.

The book under review develops this idea admirably, drawing attention not only to the action of drugs in various states of disease and disorder but also the pros and cons of different anaesthetic techniques and procedures under a wide variety of circumstances. In spite of this, it does appear that brevity, condensation and dogma have been the aim, while greater detail, explanation and a better literary style have been sacrificed to gain this end. Various sections, for example, could with benefit have been given broader coverage.

The chapter on selection of anaesthesia contains the usual high standard of teaching material that one expects from Dr. Adriani, and is worthy of study.

The reviewer finds himself described by the author as not being "a discrete anaesthetist", which is better one imagines than not being discreet.

**GERIATRIC ANESTHESIA.** P. H. Lorhan, Professor of Anesthesiology, Department of Anesthesiology, University of Kansas Medical Center, Kansas City. 90 pp. Charles C Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1955. \$3.50.

This monograph is an excellent addition to this already famous series. Though written specifically for anaesthetists who should be very familiar with this topic, this work is also of interest and practical value to all concerned with the care of older patients.

The underlying theme is the physiological changes found in the various systems of the aged. On this is based the care of these patients before, during and after operation. Reversible changes such as anaemia, hypoproteinaemia, dehydration, diabetes, obesity and the lack of reserve of the cardiac, pulmonary and renal systems are described. The means whereby these can be corrected and the margins of reserve increased are discussed.

The pharmacological effects of individual drugs used before, during and after operation are analyzed with reference to their advantages and disadvantages. The different techniques of anaesthesia are outlined in a similar manner.

The author stresses the importance of familiarity with drugs and techniques used by the anaesthetist rather

than the practice of less well-known procedures which might theoretically be of more sound choice. The underlying principles of actual anaesthetic management are emphasized.

The wisdom of special care during the postoperative period to control pain and prevent complications, as opposed to the issue of routine orders, is shown by reference to the physiological changes already present in these patients. The monograph contains both theoretical and practical material of great value.

**BLOOD SUPPLY AND ANATOMY OF THE UPPER ABDOMINAL ORGANS (With a Descriptive Atlas).** N. A. Michels, Professor of Anatomy at the Daniel Baugh Institute of Anatomy, Jefferson Medical College, Philadelphia. 581 pp. Illust. J. B. Lippincott Company, Philadelphia and Montreal, 1955. \$24.00.

This book has the stamp of authenticity and it requires only a short reading to appreciate that the author is truly conversant with his subject and that his knowledge is based on firsthand scientific investigations and observations. While most stress has been placed on the regional blood supply and its great variability, the sections on organ anatomy also bring out new knowledge. The chapter on the human liver is good and presents a new concept of the segmental division of the liver. It is also stressed that all arteries in the liver are end arteries. With reference to gallbladder surgery, the great variability in the origin and course of the cystic artery is noted and depicted and the necessity of ligating it as near as possible to the gallbladder is emphasized. In gastric surgery the importance of recognizing that the left hepatic artery may arise solely from the left gastric artery and the necessity of its preservation are well brought out. The course of the retroduodenal artery is stressed and the importance of its preservation in common bile duct surgery is noted. In pancreatic resections the necessity of preserving an aberrant common or right hepatic artery is stressed. The illustrations are profuse and well annotated and on the whole this is a fine addition to medical literature. It is a book that can be profitably perused by anyone doing upper abdominal surgery, and one that should be read and kept for ready reference by anyone aspiring to be an expert in this field.

**THE DISTRIBUTION OF THE HUMAN BLOOD GROUPS.** A. E. Mourant, Director, Medical Research Council Blood Group Reference Laboratory, The Lister Institute of Preventive Medicine, London. England. 438 pp. Charles C Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1954. \$10.50.

Dr. Mourant's book is a comprehensive, readable compilation of the data available on the distribution of human blood groups by a recognized authority in this field. This incorporates the more recent work to include the advances in the knowledge of blood groups since 1940, and as such is the most complete review of the subject available. The immense amount of material from which this volume has been drawn is evident from the bibliography of more than 1,700 references. The inclusion of nine distribution maps and excellent blood group frequency tables adds to the completeness and value of the work. The topographical and zoological indices as well as the general index will aid in its usefulness as a reference manual.

The early chapters serve as an introduction to the blood groups themselves and are sufficiently simple to be understood by the uninitiated. Some discussion is made of other characteristics valuable in anthropological research such as the sickle-cell trait and thalassemia. The distribution of blood groups on the basis of geographic units is then presented. One chapter is devoted to the distribution in animals. Two chapters are devoted to the technical aspects of typing bone and tissue specimens, and to the collection and preservation of specimens.

In general this book will be of value to the anthropologist and the research worker, but will also be enjoyed by the general scientific reader who is interested in a fascinating aspect of anthropology.

**HUMAN PATHOLOGY.** H. T. Karsner, Medical Research Adviser to the Surgeon-General of the United States Navy, Cleveland, Ohio. 960 pp. Illust. 8th ed. J. B. Lippincott Company, Philadelphia, 1955.

This textbook of general and special pathology is so well known that it is necessary only to record the changes and additions in this latest edition. Most of them could be predicted from a knowledge of the advances in medicine since the last edition appeared in 1949. Thus the discussions of stress, effects of ionizing radiation, abnormal haemoglobins, porphyrins, and the pathogenesis of fever have been revised. There is new matter on ACTH and cortisone, hyaluronidase, tuberculosis, sarcoidosis, cat-scratch disease, haemorrhagic fever and cytomegalic inclusion body disease. The general section on tumours has undergone much revision.

In the chapters on special pathology, sections on atherosclerosis, the anaemias and the leukaemias are greatly changed. The chapter on the nervous system has been completely rewritten, and sections on liver, pancreas, and endocrines have inevitably been altered greatly. Revision has been adequate throughout the book, and the new edition should retain its place as a sound basic text.

**HEART DISEASE. Its Diagnosis and Treatment.** E. Goldberger, Associate Attending Physician, Montefiore Hospital, New York. 2nd ed. 781 pp. Illust. Lea & Febiger, Philadelphia; The Macmillan Company of Canada Limited, Toronto, 1955. \$12.50.

The second edition of this practical textbook of heart disease has undergone extensive revision. As in the first edition, there is a strong personal flavour. For example, in the section on treatment of myocardial infarction, Dr. Goldberger describes in detail the regimen he uses, with reasons for his choice, though he mentions the alternatives.

The new edition contains a chapter on ballistocardiography for beginners. The chapter on heart failure has much new material on electrolytic disturbances and new methods of therapy. In accordance with current advances, the section on congenital heart disease has been greatly enlarged, as has the section on mitral stenosis. There is new material on hypopotassemia and hyperpotassemia, and on C-reactive protein in acute rheumatism. The chapters on myocardial infarction, subacute bacterial endocarditis, hypertension and atherosclerosis have been revised, mainly to include new therapeutic agents. Most of the other sections have also been subjected to change.

This new edition should be particularly helpful to the general practitioner.

**CARDIOVASCULAR SURGERY, Studies in Physiology, Diagnosis and Techniques. Proceedings of the Symposium held at the Henry Ford Hospital, Detroit.** Edited by C. R. Lam, Surgeon-in-Charge, Division of Thoracic Surgery, Henry Ford Hospital, Detroit. 543 pp. Illust. W. B. Saunders Company, Philadelphia, 1955. \$12.75.

This symposium on the surgical aspects of both congenital and acquired disease of the heart and great vessels is a triumph for the editor, the participants and the publisher, both because of the contents and the fact that it has appeared so quickly after the meeting. The participants came from many countries and the roster contains many of the most famous names in cardiac surgery. The papers and the informal discussions cover a wide range and much of the information is so up-to-date as to be unobtainable elsewhere in the literature. The illustrations

are numerous and particularly well done. This volume is required reading for all thoracic surgeons, cardiologists and most internists. Much of it will be of interest also to general practitioners.

**NEUROCHEMISTRY, The Chemical Dynamics of Brain and Nerve.** K. A. C. Elliott, McGill University, Montreal; I. H. Page, Cleveland Clinic Foundation, Cleveland; and J. H. Quastel, McGill University, Montreal. 900 pp. Illust. Charles C Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1955. \$21.50.

This book includes the work of 32 men, each of whom is an expert in his own special branch of the biochemistry of the nervous system. It makes no claim to cover all aspects of neurochemistry but presents in one volume a concise review of many of the major developments made during the past few years. Each chapter deals with a separate field, ranging from the "Chemical Constituents of Brain and Nerve"; through the metabolism of the various substances encountered in the nervous system, to end with a chapter on the "Thermodynamics of the Message". In between there are detours discussing the action of drugs and narcotics, as well as bacterial toxins and snake venoms. Although the quality of the writing is high, there is some inequality of style. It is not a book that many physicians, or even neurologists, will read from cover to cover, but each chapter is complete in itself, so that it becomes a useful reference volume which will occupy an important place in the field of neurology.

**TEXTBOOK OF NEUROLOGY.** H. H. Merritt, Professor of Neurology, Columbia University, New York. 746 pp. Illust. Lea & Febiger, Philadelphia; The Macmillan Company of Canada Limited, Toronto, 1955. \$12.00.

This new textbook of neurology is essentially a practical guide for clinicians, and is written for senior students and general physicians. It is assumed that readers are already acquainted with the anatomy and physiology of the nervous system as well as the methods of examination.

The description of clinical syndromes, grouped where possible in relation to etiology, are concise and clear, and the allotment of space in accordance with the importance of the disease is very satisfactory. Enough pathology and laboratory work is given for an understanding of clinical features, and the sections on treatment are adequate and realistic. Tables showing, for example, frequencies of involvement of certain structures in diseases, or relative different types of tumour, are a helpful feature of this text. Illustrations are good, and there is an adequate bibliography for further reading.

**FRACTURES AND JOINT INJURIES. VOL. II.** Sir Reginald Watson-Jones, Extra-Orthopaedic Surgeon to Her Majesty The Queen, Orthopaedic Surgeon to His Late Majesty King George VI. 1,073 pp. Illust. 4th ed. (complete in two volumes). E. & S. Livingstone Ltd., Edinburgh and London; The Macmillan Company of Canada Limited, Toronto, 1955. \$23.00 for the set.

All those interested in the management of fractures—student, postgraduate student, practitioner, surgeon, even teacher and professor—will again find in this completely rewritten volume the answer to their simplest and most profound questions.

Nearly every sentence and paragraph in this book has been rewritten with even increased clarity, and with inclusion and discussion of all new methods and philosophies of treatment. The importance of adequate immobilization in fractures and dislocations of the shoulder is stressed, and the author now believes that most recurrent dislocations of the shoulder are due to

inadequate immobilization of the initial dislocation after reduction. Excellent colour plates are added to demonstrate Bankart's repair of recurrent dislocation.

New classifications of joint injuries are proposed, to emphasize the seriousness of complete ligamentous tears. The author has discarded the classification of Ashurst in ankle fracture-dislocations, and with Philip Wiles and Crawford Adams presents a new classification.

The treatment of fractures of the os calcis, always a controversial subject, has been rewritten and clarified; the recent contributions of Essex-Lopresti advocating no immobilization, and of Palmer and others advocating open reduction of the depressed articular surface, are discussed.

The chapter on fractures and dislocations of the spine with paraplegia has been greatly expanded to include the contributions in this field by Munro, Guttmann, Botterell, Jousse and others. Any student who has read and digested this excellently written chapter will welcome an examination question on this topic.

Once again the author stresses that treatment does not end with a united fracture, but emphasizes that rehabilitation of the injured man is an equally important part of the surgeon's work. There can be little doubt that this will continue to be the book most frequently removed for study from the surgeon's bookshelf; it is to be hoped that the sound principles outlined here will continue to guide fracture treatment for many years to come.

**PRINCIPES DE RADIOBIOLOGIE (PRINCIPLES OF RADIOBIOLOGY).** Z. M. Bacq, Professor at the University of Liège, Belgium, and P. Alexander, Chester Beatty Research Institute, Institute of Cancer Research; Royal Cancer Hospital, London, England. 478 pp. Illust. Masson & Cie., Paris, 1955. 4,250 fr.

Although radiobiology is not a new science, the developments in the atomic field have tremendously increased its importance during the last 10 years.

Drs. Bacq and Alexander have carried out important researches in new aspects of this science, studying radiochemistry and the possibilities of protection by chemical substances. The present book is not a report of experiences, but a complete and practical résumé of what is known in radiobiology. This, however, is seen in the light of the experiences of these two collaborators.

The authors stress the importance of oxygen in tissues in relation to the degree of activity of radiation, and the importance of the protective action of cystamine. The consequences foreseen as regards improvement in utilization of radiotherapy for cancer are very interesting.

This book is for all those interested in the biological aspects of radiation: the biologist, radiologist, physical chemist, etc.

It ends with some interesting speculations on radiation and human life on earth.

Of particular interest also are the chapters on radiation and stress, chemical protection against x- and gamma rays, the importance of oxygen, and the pathological chemistry of irradiated organisms.

**ETIOLOGY OF CHRONIC ALCOHOLISM.** O. Die-thelm, Professor of Psychiatry, Cornell University Medical College, Ithaca, New York. 229 pp. Illust. Charles C Thomas, Springfield, Illinois; The Ryerson Press, Toronto, 1955. \$7.50.

This monograph represents the results of a five-year programme of investigation into the etiology of chronic alcoholism. The studies were supported liberally by the National Research Council and carried out by a team of investigators from various disciplines, including internal medicine, psychiatry, social and cultural anthropology, psychology, and pharmacology.

This is an interesting and valuable book and represents attempts of a group of capable investigators to go a step further in understanding the background of one of our

most baffling and costly disease problems. The title may be misleading, for there is no attempt here to put together an all-encompassing, comprehensive theory of the etiology of chronic alcoholism. The studies are unrelated but make their own contribution to the structure of knowledge we are gradually building up about this illness.

In the introduction, a definition is given of chronic alcoholism as a stage at which an individual uses alcohol to such an extent that it interferes with a successful life, including physical, personality and social aspects, and he is either not able to recognize the effect or not able to control his alcohol consumption, even though he knows its disastrous results. An excessive drinker is an individual who uses alcohol frequently and in large quantities and may even behave pathologically when under the influence of alcohol. He is, however, capable of overcoming the habit when he becomes aware of the necessity for it. One wonders why these definitions were adopted. While one has no particular quarrel with them, they seem to contribute nothing in addition to definitions already agreed upon by the World Health Organization. While the WHO definitions would certainly not be regarded as perfect, they have been made known to people working in this field, and it would save a great deal of confusion if they were used until better definitions were agreed upon.

The first study, entitled *Psychopathology and Character Structure in Chronic Alcoholism*, was carried out by Mary J. Sherfey, M.D., and is essentially an attempt to diagnose the underlying personality and psychiatric problems in a group of patients seen at the Payne-Whitney Clinic. The 161 cases included 85 from the Payne-Whitney Clinic, 27 which had been treated by the writer, and 49 which had been treated by other colleagues. While one would not question the findings which show the distribution of various personality difficulties, psychoses, and neuroses, as well as epileptic and brain-damage cases among the patient-group, the study does not contribute greatly to solving a problem raised by the studies of other reliable people which suggest that the alcoholic does not need to have a serious pre-morbid personality problem before becoming dependent on or habituated to the use of alcohol. The Sherfey study is done on a very selected group of cases, those who were willing to accept treatment in a voluntary treatment setting and remained long enough to allow adequate records to be compiled about them. One of the other studies acknowledges that these particular patients generally come from a privileged social group and that there were elements of selection which actually entered into their admission to a clinic for study.

A second study, on *Biochemical Experimental Investigations of Emotions and Chronic Alcoholism*, by M. F. Fleetwood, M.D., reports some interesting findings with regard to amounts of norepinephrine and acetylcholine-like substances which occur in various states of anxiety, tension and resentment. The techniques of the experiment have been well described and would suggest that there are some biochemical differences in individuals with these various tension states which disappear under the influence of alcohol. There is some question as to how clearly the criteria used distinguish between anxiety and tension. Such studies, however, might give us some intimation as to which patients are more likely to get relief and comfort from the use of alcohol. It is doubtful if they go any further than that in establishing any basis for the setting up of the actual dependence on alcohol.

The study on *Familial and Personal Backgrounds of Chronic Alcoholics*, by Manfred Bleuler, is most interesting. The study was made on a group of 50 alcoholics who, again, represented a fairly select educational and intellectual group. Information was collected about 1,313 relatives of these patients. Among the relatives there were no more cases of schizophrenia, manic-depressive psychosis, epilepsy, or oligophrenia than in the average population. There was much more alcoholism among the siblings, parents, and husbands and wives than in the

average population, and there were more morbid personality developments of neurotic or psychopathic nature among the close relatives. These findings held true for studies of alcoholics made by Brugger in Switzerland. There was evidence of some endocrinological disturbance in about a fourth of the cases, and while it was felt that there was a causal relationship between these disturbances and the alcoholism, no conclusion was drawn as to which was the primary event. It was felt that about 20% of this group could be considered as having clinically normal personalities before starting to drink. It was concluded also that the constitutional background is identical with that of neurotic and psychopathic personality developments and that the alcoholism had to be considered essentially a symptom. This implied that there was no direct inheritance of alcoholism.

In the fourth study, using the same techniques as in the previous study, Dr. Bleuler compares a group of Swiss and American alcoholics. The findings for the Swiss group were similar to those for the American group.

The final study, which might more rightly be called an anthropological essay, describes in a most interesting way the drinking habits of the Cantonese in New York City. This is worthy of consideration for all of us who have views on the social use of alcohol. It would seem that the lack of alcohol problems among the Chinese is related to their attitude toward drunkenness and intoxication, despite the fact that a high percentage of the population make use of alcoholic beverages.

This book is essential for all physicians actively engaged in the study of alcohol problems.

**JOINT ILO/WHO COMMITTEE ON THE HYGIENE OF SEAFARERS.** Second Report. World Health Organization: Technical Report Series, No. 92. 20 pp. Available also in French and Spanish. World Health Organization, Palais des Nations, Geneva, 1955. \$ .30.

A joint committee on the International Labour Organization and the World Health Organization met in April 1954 to discuss medical problems of seafarers, an ideal subject for international co-operation. A previous committee had met in 1949 and suggested problems for study. Of these, the present committee considered: (1) Medical advice by radio to ships at sea, being guided by a comprehensive report from the ILO on practice and experience in various maritime countries. The committee found the existing arrangement generally satisfactory. (2) Examination of seafarers to detect tuberculosis. Here a report prepared by WHO was used as a basis for discussion. Although statistics on incidence of tuberculosis among seafarers are somewhat equivocal, there is good reason to suppose that the occupational hazard is above normal, and the committee makes a series of recommendations to governments for entry and periodic examinations of all classes of seafarers. (3) Medicine chests on board ship, a subject on which a WHO report was also available. This report contained recommendations for a minimum list of medicaments, instruments and appliances to be carried at sea, and also for inspection of these. It was adopted with some amendments by the committee. (4) Prevention and treatment of venereal disease. Again WHO prepared a very full report on the subject, upon which the committee made various comments.

The report of the committee should be of particular help to government departments which have to deal with seafarers. The committee of course may have suffered from the disadvantage that the ILO members were not physicians (although they had advisers with them) and therefore presumably contributed little to most of the deliberations. The WHO representatives were all distinguished specialists in maritime medicine from the U.S.A., U.K., France, Norway and India, and their findings must carry considerable weight.



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**A SHORT HISTORY OF MEDICINE.** E. H. Ackerknecht, Professor of the History of Medicine, the University of Wisconsin Medical School, Madison. 258 pp. Illust. The Ronald Press Company, New York, 1955. \$4.50.

Of the writing of books on the history of medicine, there is, fortunately, no end. Some are so voluminous, indeed encyclopaedic, that the reader is engulfed; these are indeed books of reference. Others are of so popular a character that they appeal to the public rather than to the doctor. The present work strikes a happy mean between these two extremes. It gives a bird's eye or aeroplane view of the vast field of medical history in the space of a little over 200 pages, and this includes an excellent picture of primitive and ancient medicine.

It is a *multum in parvo*, a synopsis, and as such it has to pay the inevitable penalty of lack of atmosphere, with little emphasis on the personalities of the men who have made the history. While 781 names are listed in the index, only 10 lines are devoted to Boerhaave, 12 to John Hunter, 13 to Morgagni, and six to Beaumont and Alexis St. Martin, and Osler's name is merely mentioned on three occasions. In the excellent and valuable "Suggestions for Further Reading", Dr. Ackerknecht is the first to recognize this fact: "In this short book the author has deliberately limited himself to a bare outline of the history of medicine. Material which merits a book in itself has often been compressed into a paragraph."

This feature of the book will appeal to the busy doctor who wishes to make a rapid survey of the general subject. It will not tend to kindle a fire in the student standing at the threshold of his professional career. This is no criticism of the volume. It is merely a statement of the elementary fact that no book can be equally suitable for every class of reader.

**PERSPECTIVES AND HORIZONS.** Edited by Selman A. Waksman, Institute of Microbiology, Rutgers University, New Brunswick, New Jersey. 220 pp. Illust. Rutgers University Press, New Brunswick, N.J., 1955. \$3.50.

This is a compendium of current interests in modern microbiology and immunology in the form of documented discussions by accepted authorities. The symposium was associated with the ceremonies of dedication of the Institute of Microbiology, Rutgers University, and therefore fittingly includes three addresses delivered on that occasion: by the president of the university, by Dr. Waksman as director of the institute, and by Professor A. J. Kluyver who can justly be accepted by all microbiologists to represent them on any important occasion.

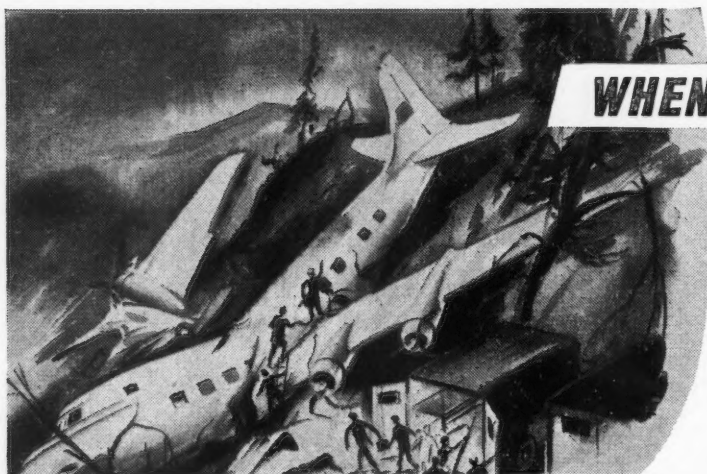
The scientific discourses are divided into three comprehensive headings: The Microbe as a Living System, Metabolism of Micro-organisms, and Micro-organisms and Higher Forms of Life; each of these is subdivided to provide for analytical and speculative discussion of immediately urgent subjects in today's research. Because authorities make these communications, they are of interest to research workers of any degree of experience in microbiology, and stimulating thoughts are to be derived from many pages in this little book, whether particular points are accepted or doubted by the reader. To a large extent, the tone set is expressed by the final words of Dr. Lederberg's article: "but the wisest prophet would look beyond the visible horizon for the questions we are not yet ready to ask." This attitude alone is more than enough to strongly recommend the book.

**CULTURE AND MENTAL DISORDERS. A Comparative Study of the Hutterites and Other Populations.** J. W. Eaton, Assistant Professor of Sociology, Wayne University, Indiana, and R. J. Weil, Assistant Professor of Psychiatry, Dalhousie University Medical School, Halifax, N.S. 254 pp. The Free Press, Glencoe, Illinois, 1955. \$4.00.

Does the complexity of our Western culture make us more susceptible to mental disorders, and do people living in a simpler group actually have as little mental ill-health as they are believed to have?

To make a contribution to our knowledge in these fields, the sociologist, Joseph W. Eaton, undertook a field study of a well-known group, the Hutterite farm culture as it is lived in the Jamesville colony of South Dakota. The Hutterites are the descendants of a communal religious tradition that is four centuries from its Moravian originator, Jacob Hutter, who was martyred in 1536. His followers scattered after persecution from Switzerland to Hungary; then from persecution to Russia and again to South Russia. Finally the entire group left Russia for the U.S.A. between 1874 and 1877. The colonies, each of approximately 90 persons, are dotted in localized areas through the American and Canadian northwest. There they have multiplied within the American culture, using it and its machines and modern agricultural methods and being influenced by the Americans but maintaining their identity and culture. They have been taken for granted or scorned by their neighbours for their odd clothing and hair styles, while farmers are often jealous of the Hutterites' prosperity. These people have had a reputation for showing greater freedom from mental disorder than the general American culture.

The Wayne University sociologist, Dr. Eaton, worked in collaboration with the psychiatrist Dr. Robert J. Weil, assistant professor of psychiatry at Dalhousie Uni-



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versity. The Hutterite people who acted as spokesmen gave most creditable co-operation in this intimate study of their colony's personal, social and religious life and their morbidity.

The statistical results of the Hutterite study are compared with statistics of 10 other closed populations and the general American population. Some of the variables are thus pin-pointed, showing for example the relationship to mental disorder of social selection, genetics, in-group patterns, and various emotional relationships as seen in child care and education.

Diagnostic categories selected for study were Psychoses, Psychoneuroses, Personality Disorder, Social Disorganization, Epilepsy and Mental Defect. Each of these categories was represented in the Hutterite community, indicating that in spite of a reputation for good mental health there was no immunity from severe psychiatric disturbance, and that depressive illnesses were very prevalent. The authors stress their conclusion that appearances and impressions based on superficial contacts can be very deceptive. On the other hand, they were able to show that the relatively well-integrated social system of the South Dakota Hutterites did influence favourably the relative total morbidity when compared with other groups.

Depressive illnesses were three times as prevalent in the Hutterite community as in the other groups, while the Hutterite figures for schizophrenia were less. If the assumption is correct that the ratio of schizophrenic and manic-depressive reaction varies in different communities, these findings lend support to the general theory that sociological factors play an important role in the way in which functional mental disorders are manifested. Schizophrenia is generally acknowledged to be the most common disorder of the less integrated categories in the social fabric, while manic-depressive psychosis is higher among professionals and people of suburban areas, i.e. group-centred people.

Psychoneurotic individuals were found. They were judged so because they had been a severe emotional problem to themselves, to their family or to the community. Clues used to find them were: frequent visits to

doctors, physical symptoms without organic basis, failure to marry, inability to do a full day's work, rigidity of attitude, compulsiveness. There was a rate of about one psychoneurotic out of every 30 adults in the year of the study (and four-fifths of the cases were in women). This statistical rate was found to be lower than in more stressful groups with which the figures were compared.

The authors concluded that their findings did not confirm the hypothesis that a relatively uncomplicated way of life provides virtual immunity from mental disorder. The strong social cohesion of the Hutterite group was a protection and their social security and friendliness were positive features, but negative factors were present also. Hutterites feel different and are so regarded. Their styles and the homemade clothing of the men and the polka-dot kerchiefs of the women mark them in the community which labels them as inferior, while Hutterites look on their neighbours as spiritual pagans. Such characteristics leave their mark on the emotional well-being of the individual.

The authors have made interesting comment on many of the social conditions behind personality facets commonly associated with mental disorder, and their book brings out facts that would be of help to anyone concerned with mental health.

**KIND KILLING.** Compiled by F. J. Vinter, Technical Secretary of U.F.A.W. 28 pp. Illust. 3rd ed. U.F.A.W. (The Universities Federation for Animal Welfare), 7a Lamb's Conduit Passage, London, W.C. 1, England, 1955. 6d.

The Universities Federation for Animal Welfare has produced this little book for those who have to destroy animals humanely but without expert help. The animals whose humane killing is described include domestic pets, laboratory animals and farm stock. As with other publications from this body, the approach is rational and practical and devoid of unhelpful emotionalism. A copy might well be put in the hands of junior laboratory staff, though the book will also be useful to many members of the general public.

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## Books Received

Books are acknowledged as received, but in some cases reviews will also be made in later issues.

**Sexual Precocity.** H. Jolly, Consultant Paediatrician, Plymouth Clinical Area, Mass. 276 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955, \$7.50.

**Splenin A in Rheumatic Fever.** A. F. Coburn, L. V. Moore, J. Wood and M. Roberts, The Rheumatic Fever Research Institute, Northwestern Medical School, Chicago. 87 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955, \$4.00.

**Applied Medical Bibliography for Students.** W. D. Postell, Medical Librarian and Professor of Medical Bibliography, Louisiana State University School of Medicine, New Orleans; 142 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955.

**Anæsthesia in Ophthalmology.** W. S. Atkinson, Associate Clinical Professor of Ophthalmology, New York University Post-Graduate Medical School, House of the Good Samaritan, Watertown, New York. 101 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955, \$3.50.

**New Concepts in Surgery of the Vascular System.** E. Holman, Professor of Surgery, Stanford University School of Medicine, San Francisco. 108 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955, \$3.25.

**Hypothermic Anæsthesia.** R. W. Virtue, Associate Professor and Head of Division of Anæsthesiology, University of Colorado School of Medicine, Denver. 62 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955, \$2.75.

**Clinical Analgetics.** E. G. Gross, Professor and Head of Department of Pharmacology, State University of Iowa, Iowa City, and M. J. Schiffrin, Assistant Director of Clinical Research, Hoffman-LaRoche, Inc., Nutley, New Jersey. 101 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955, \$3.25.

**Introduction to Virology.** G. Dalldorf, Director, Division of Laboratories and Research, New York State Department of Health, Albany. 102 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955, \$3.75.

**La Lepre (Leprosy).** R. Chaussinand, Head of the Leprosy Department, Institut Pasteur, Paris. 312 pp. Illust. 2nd ed. Expansion Scientifique Française, Paris, 1955. 3,500 Fr.

**Neuroglia, Morphology and Function.** P. Glees, University Demonstrator and Lecturer in Physiology, University Laboratory of Physiology, Oxford. 111 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955, \$6.00.

**Dextran, Its Properties and Use in Medicine.** J. R. Squire, Leith Professor of Experimental Pathology, University of Birmingham, J. P. Bull, Director, Medical Research Council Industrial Injuries and Burns Research Unit, Birmingham Accident Hospital, W. d'A. Maycock, Lister Institute of Preventive Medicine, Elstree, C. R. Ricketts, Member of Scientific Staff, Medical Research Council, University Research Fellow, University of Birmingham, England. 91 pp. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955, \$3.50.

**Salivary Gland Tumors.** D. E. Ross, Chief Surgeon, Ross-Loos Medical Group, Los Angeles, California. 86 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955, \$8.25.

**Suprapubic Prostatectomy.** T. Hryntschak, Late Director, Department of Urology, Vienna City General Hospital, Austria. Translated by N. S. R. Maluf, Chief of Urology, Surgical Service, Veterans Administration Hospital, Houston, Texas. 187 pp. Illust. Revised ed. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955, \$9.25.

**Histamine, Its Role in Anaphylaxis and Allergy.** M. R. E. Silva, Department of Biochemistry and Pharmacodynamics, Instituto Biológico, Sao Paulo, Brazil. 248 pp. Illust. Charles C Thomas, Springfield, Ill.; The Ryerson Press, Toronto, 1955, \$8.25.

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References to books should be set out as follows:

PICKWICK, S., *Textbook of Medicine*, Jones and Jones, London, 1st ed., p. 30, 1955.

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(Continued on page 34)



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Continued on Page 36

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**FOR SALE.**—Residence and office of late Dr. Hugh D. McColl, who died on November 29, 1955, together with office furnishings and equipment and records of general practice with yearly cash receipts of over \$22,000 in town of Petrolia, Ontario, which has a population of 3,500 and a good general hospital. Apply: Mrs. H. D. McColl, Petrolia, Ontario, or to Taylor, Jamieson, Mallon, Fowler & Oliver, Sarnia, Ontario, solicitors for estate.

**FOR SALE VICTORIA, B.C.**—Active general practice. Good income and prospects. Well-equipped offices located in busy commercial and residential area. Owner wishing to specialize early in new year. Excellent terms. Reply Box 541, Canadian Medical Association Journal, 150 St. George Street, Toronto 5, Ontario.

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**FOR SALE—TORONTO.**—Office and home. Well established general practice, west side of Toronto. Luxuriously equipped office. Office and home consists of eleven rooms. Owner specializing. Terms if desired. Reply to Mrs. I. Grenville, 294 Roncesvalles Avenue, Toronto, Ontario.

### Internships and Residencies

**WESTMINSTER HOSPITAL** has the following positions available commencing July 1, 1956: Assistant residencies in anaesthesia, radiology, medicine and psychiatry; senior internships in medicine and surgery. Westminster Hospital is con-

ducted under the Department of Veterans Affairs, and is a 1,500-bed hospital with both general treatment and psychiatric divisions. It is approved for training by the Royal College of Physicians and Surgeons of Canada, and is closely integrated into the teaching programme of the University of Western Ontario Medical School. For further particulars apply to Dr. W. D. S. Cross, Chairman of the Intern Committee, Westminster Hospital, London, Ontario.

**RESIDENCIES IN ANAESTHESIA.**—Applications are invited for one resident and one assistant resident appointment in anaesthesia commencing July 1, 1956. Heavy service, all types. Minimum pre-requisite two years and one year internships respectively, preferably including anaesthesia. Service approved by Royal College of Physicians and Surgeons of Canada. Salary: resident \$200 per month; assistant resident \$150-\$160. Full maintenance provided. Applications to Director of Medical Education, or Superintendent, Regina General Hospital, Regina, Saskatchewan.

**WANTED: ROTATING INTERNS** for January 1 and July 1, 1956, to serve in Hartford Municipal Hospital, 275 beds, large outpatient service and formal teaching programme. Annual salary \$1,435 plus meals, room, uniforms and laundry. Limited number of attractive apartments for married doctors at low rent. Fully approved by the American Medical Association and the Joint Commission on Accreditation of Hospitals. Direct correspondence to Director of Medical Education, McCook Memorial Hospital, Hartford, Connecticut.

**ST. LUKE HOSPITAL** in Montreal, capacity of 451 beds, is considering applications for internship or residencies in the different services of a general hospital and most specially in the following services where the teaching is approved by the American College of Surgeons: surgery, medicine, obstetrics, oto-rhino-laryngo-ophthalmology, pathology and radiology. Applicants may address their applications to Doctor H. I. Tetreault, Medical Superintendent.

**PSYCHIATRIC RESIDENCIES.**—HOSPITAL WITH FORTY PHYSICIANS OFFERS FULLY ACCREDITED THREE YEAR TRAINING PROGRAMME BEGINNING JULY 1, 1956, FOR MEN AND WOMEN DESIRING CERTIFICATION IN PSYCHIATRY. INCLUDES UNIVERSITY POST-GRADUATE COURSE, GUEST LECTURES, TRAINING IN MODERN THERAPEUTIC PROCEDURES AND SUPERVISED WORK IN MENTAL HYGIENE CLINICS. INITIAL SALARY \$4,000 PLUS FAMILY MAINTENANCE. APPLY BOX 526, CANADIAN MEDICAL ASSOCIATION JOURNAL, 150 ST. GEORGE STREET, TORONTO 5, ONTARIO.

# ANNUAL CLINICAL CONFERENCE

CHICAGO MEDICAL SOCIETY

February 28, 29, March 1 and 2, 1956

Palmer House, Chicago

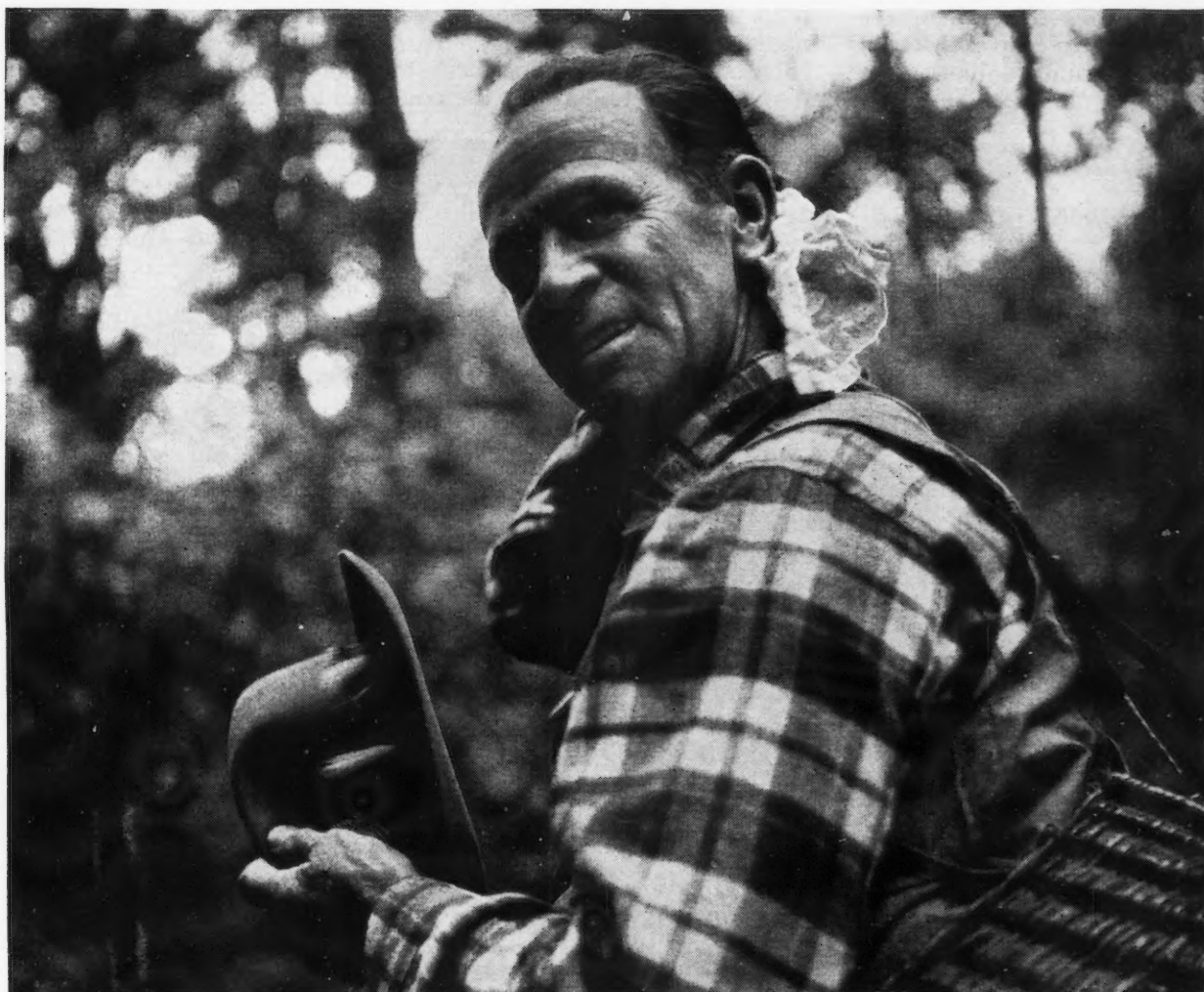
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PANELS ON TIMELY TOPICS                      TEACHING DEMONSTRATIONS

SCIENTIFIC EXHIBITS worthy of real study and helpful and time-saving TECHNICAL EXHIBITS.

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Vitamin B <sub>12</sub> .....	3 mcgm.
Thiamine Mononitrate (B <sub>1</sub> ).....	5 mg.
Riboflavin (B <sub>2</sub> ).....	5 mg.
Niacinamide.....	15 mg.
Folic Acid.....	1 mg.
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Calcium d-Pantothenate.....	5 mg.
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Vitamin E (astocopherylacetates) 10 Int. Units	
Rutin.....	25 mg.
Stomach Concentrate.....	0.5 mg.
Iron (as FeSO <sub>4</sub> ).....	10 mg.
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Calcium (as CaHPO <sub>4</sub> ).....	145 mg.
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Boron (as Na <sub>2</sub> B <sub>4</sub> O <sub>7</sub> ·10H <sub>2</sub> O).....	0.1 mg.
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## NEWS AND NOTES

FEDERAL HEALTH  
GRANTS

*New Brunswick.*—A federal health grant of \$50,000 has been allocated to the Hotel Dieu Hospital, Tracadie, to help provide increased accommodation for patients and nurses. The Hotel

Dieu Hospital, which is operated by the Religious Hospitalers of St. Joseph, provides services for some 30,000 people in and around Tracadie.

*Alberta.*—Three hospitals in Alberta have been allotted grants to help provide increased accommodation for patients and nurses. The largest, \$154,750, goes to Medicine Hat, to assist in the con-

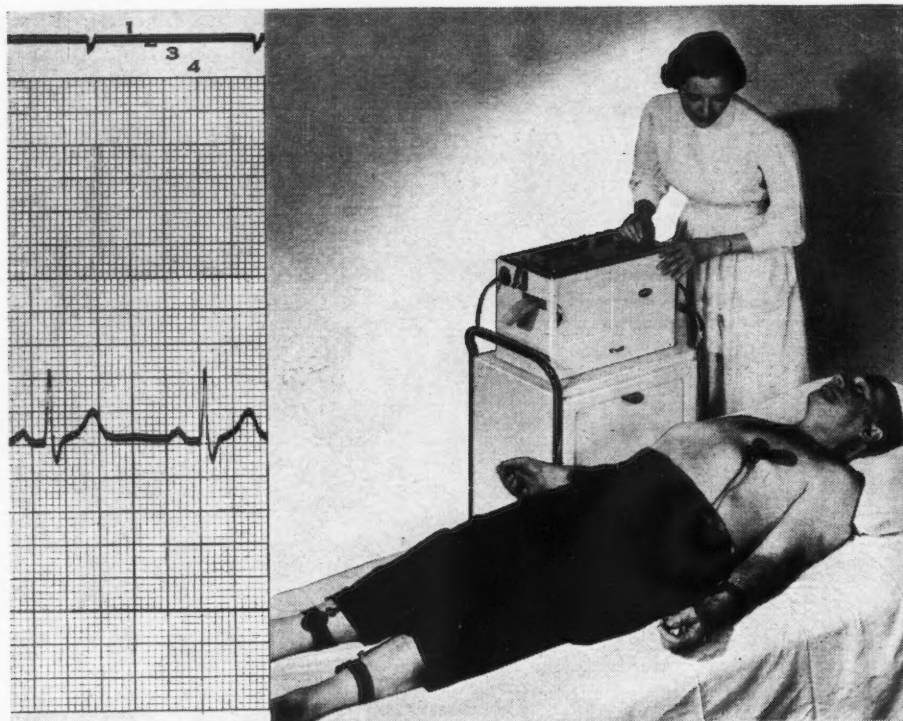
struction of a municipal hospital to replace the 65-year-old Medicine Hat General Hospital. At Beaverlodge, a grant of \$16,250 has been allotted towards construction of an addition with provision for nine patients' beds, nine bassinets and ten nurses' beds. A grant of \$10,320 goes towards construction of the Woodcroft Health Clinic, Edmonton, with space for a well-baby clinic, a dental clinic, and laboratory and x-ray facilities.

*Saskatchewan.*—A grant of \$38,000 has been awarded the Swift Current Union Hospital to assist in the construction of a nurses' residence.

*Ontario.*—In Galt a grant of \$47,333 goes to South Waterloo Memorial Hospital towards construction of an addition to the two-year-old hospital, with accommodation for 45 additional adult patients and seven bassinets.

A grant of \$83,296 has been allotted to Dryden District General Hospital, Dryden, for a new hospital with accommodation for 58 adult patients, 18 bassinets and a 21-bed nurses' residence.

*Newfoundland.*—A federal health grant of \$2,092 goes to the International Grenfell Association towards the purchase of equipment for a new nursing station at Roddickton. A public health bursary goes to Dr. John W. Davies for a diploma course in public health at the University of Toronto's School of Hygiene. Dr. Davies, who came to this country recently from England, will join the Newfoundland Department of Health upon completion of his course next year.



*Taking an Electrocardiogram is Easy*  
with **BURDICK EK-2**  
**DIRECT-RECORDING**  
**ELECTROCARDIOGRAPH**

The Burdick EK-2 has made electrocardiography so easy that once the electrodes are applied, the procedure is almost automatic. The inconveniences of chemicals, dark rooms, batteries and ink have been eliminated.

Leads are marked automatically and are selected at the turn of a dial. The heat-sensitive paper moves at a calibrated speed, and the heated stylus writes directly on the paper. Timing is also automatic.

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**INTERNATIONAL  
SYMPOSIUM ON  
VENEREAL DISEASES**

The First International Symposium on Venereal Diseases and the Treponematoses will be held at the Statler Hotel, Washington, D.C., from May 28 through June 1, 1956. The symposium will be sponsored by the Public Health Service, U.S. Department of Health, Education and Welfare, and the World Health Organization. It will afford an opportunity for authorities in the field from all over the world to exchange ideas and information on the latest developments in research, diagnosis, treatment and case finding of the

(Continued on page 40)

Improvement  
with greater safety  
in  
rheumatoid arthritis  
**METICORTEN\***

(PREDNISONE - SCHERING)

- Avoids sodium and water retention.
- Avoids weight gain due to edema.
- No excessive potassium depletion.
- Increased relief of pain, swelling, tenderness; diminishes joint stiffness.
- Lowers sedimentation rate even where cortisone or hydrocortisone ceases to be effective—"cortisone escape"
- More potent than cortisone or hydrocortisone, requires smaller dosage.
- Patient may be transferred directly from cortisone or hydrocortisone to Meticorten without difficulty.

Current investigations indicate that Meticorten also produces beneficial results in many other diseases responsive to corticosteroids.

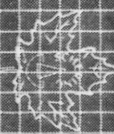
*Meticorten is available as 1, 2.5 and 5 mg. tablets.*

\*T.M.

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**GARAGE DOOR OPERATOR**



As you enter your driveway, touch a button on the dash of your car and your garage door opens and lights turn on; you drive in, dry, comfortable, safe, day or night in any weather. Delco-matic fits any car, any garage, any door, single or double or two singles. Makes your garage door as modern as your car and your home.

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### NEWS AND NOTES

(Continued from page 38)

venereal and treponemal diseases.

The agenda will cover such topics as: Control of Venereal Diseases and the Treponematoses in Retrospect and Prospect; Reporting and Statistical Problems; Natural History of Syphilis and the Treponematoses; Experimental Syphilis Management and Prognosis of the Treponematoses and the Venereal Diseases; Gonorrhoea, the Minor Venereal Diseases and Non-gonococcal Urethritis; Epidemiology and Control Techniques; Health Education and Public Information; Voluntary Agency Co-operation in Control Programmes.

The symposium is open to all physicians, scientists and professional health workers. Anyone interested in submitting a paper for consideration by the Programme Committee should send an abstract of his paper to Dr. C. A. Smith, Medical Director, Venereal Disease Programme, Division of Special Health Services, Public Health Service, Department of Health, Education and Welfare, Washington 25, D.C., as soon as possible. Accepted papers may be presented in person or by an alternate. Abstracts must be received no later than February 1, 1956. The working languages of the symposium will be French, Spanish, and English. Arrangements are being made for simultaneous interpretation.

### UNIVERSITY OF BUFFALO

A course on the physiological basis of disease of the heart and lungs is being presented by the University of Buffalo School of Medicine for the staff of the Deaconess Hospital on Fridays, from 4.00 to 5.30 p.m., on January 6, 13, 20, 27; February 3, 10, 17, 24; and March 2 and 9, 1956.

### AIR POLLUTION

The U.S. Public Health Service has contracted with three federal agencies to conduct research in community air pollution problems. Congress last year appropriated \$1,785,000 to the Health Service for its air pollution research programme this year. Under this programme, the Health Service has allocated a total of \$392,000 to the Bureau of Mines, Department of

Interior, and the National Bureau of Standards and the Weather Bureau, Department of Commerce.

One-half of this sum will be used by the Weather Bureau to study the dilution and dispersal of contaminants in the atmosphere. These will include the development of techniques for the survey of problem areas, with due regard to the nature and variability of the weather processes involved; evaluation of existing weather data to determine air pollution potentialities; and investigation of methods of predicting weather conditions which may aggravate severe air pollution, including the need for development of alert and warning systems.

The National Bureau of Standards has been allocated funds for development of methods of analyzing and identifying various contaminants; and for studying reactions that take place in air between gases and chemicals that may cause pollution of major importance.

The Bureau of Mines will investigate the causes of inadequate incineration of combustible wastes and the means of improving incineration; will evaluate sulphur dioxide removal processes; will evaluate elements from internal combustion engines which may contribute to air pollution; and will undertake the sampling of a limited number of stack effluents, among other studies.

#### EXPERIMENTAL RESEARCH INTO PROBLEMS OF AGING

Candidates wishing to submit entries for the 1955-56 Ciba Foundation Awards of papers descriptive of research relevant to basic problems of aging are reminded that these must reach the Ciba Foundation not later than *February 10, 1956*.

Information about the Awards, for those not already aware of the conditions, may be obtained on application to Dr. G. E. W. Wolstenholme, Ciba Foundation, 41 Portland Place, London, W.1., England.

#### ACNE VULGARIS

"There are many pathological conditions that never endanger but

often ruin life. Foremost among these 'harmless' conditions is acne of the adolescent, which in its more serious forms extends well into the third decade of life and in its scarring variety may leave unsightly pockmarks visible through a lifetime. . . .

"Further basic and clinical research is badly needed in this field. Obviously, it will take time until we shall have a 'routine' therapy that will not fail in any case. Until then the practitioner should learn not to minimize the significance of acne and should not try to console the patient with such platitudes as 'this is nothing,

every youngster must go through it' or with untrue statements such as 'you will be all right as soon as you get married'. He rather should encourage the patient to have treatment by a specialist. In the great majority of cases this will yield satisfactory results."—J. A. M. A., 159: 1124, 1955.

#### FRACTURES OF THE TIBIAL SHAFT

The healing of fractures of the shaft of the tibia is notoriously difficult and troublesome. As result

(Continued on page 42)

## The long and short of Bentylol's relief of nervous gut

Clinicians<sup>1,2</sup> prove Bentylol is  
long on effective relief... short  
on unwanted side effects including  
blurred vision and dry mouth.

1. McHardy and Browne: *Sou. Med. J.* 45:1139, 1952. 2. Lorber  
and Shay: *Fed. Proc.* 12:90, 1952.

Complete Bentylol bibliography on request.

# BENTYLOL

(Dicyclanone Hydrochloride)

another exclusive development of Merrell research

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## BENTYLOL

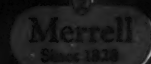
Bentylol affords direct (musculotropic) and indirect (neurotropic) spasmolytic action. Bentylol provides complete and comfortable relief in smooth muscle spasm; particularly in functional G.I. disorders, in irritable colon, pylorospasm, biliary tract dysfunction and spastic constipation.

**Composition:** Each capsule or teaspoonful (5 cc.) contains 10 mg. of Bentylol (dicyclanone hydrochloride). Bentylol with Phenobarbital adds 15 mg. of phenobarbital to the preceding formula.

**Dosage:** Adults—2 capsules or 2 teaspoonfuls of syrup, three times daily, before or after meals. If necessary, repeat dose at bedtime. In Infant Colic—½ to 1 teaspoonful, ten to fifteen minutes before feeding.

**Supplied:** Bentylol—In bottles of 50 and 500 blue capsules, and Bentylol Syrup in 16 and 80 oz. bottles. Bentylol with Phenobarbital—In bottles of 50 and 500 blue-and-white capsules, and Bentylol Syrup in 16 and 80 oz. bottles.

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comfortable,  
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**CAN BE USED IN CASES OF:** arthritis, fibrositis, brachial neuritis, radiculitis, the neck-shoulder-hand syndrome, muscle injuries and subluxation of vertebral articular facets.

**HELPFUL IN:** taking X-rays in cases of acute injuries, in infections, exposure to cold and dampness, neurologic lesions, poliomyelitis, and post-operative care.

**HAS BEEN USED:** in cases of certain ear conditions, in cases where casts or braces were formerly used, in occipital neuritis and painful swallowing. The Lewin Cotton Collar has also been used in conjunction with the Jackson Pillow or head traction or with the Tractolator.

**SUPPORTS, PREVENTS FURTHER INJURY, PROTECTS AGAINST DRAFTS. HELPS RETAIN BODY HEAT, COMFORTABLE. CREATES MILD TRACTION, REMINDS PATIENT TO BE CAREFUL.**

*\*As described in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Vol. 155, No. 13, July 24, 1954.*

**S. H. CAMP and COMPANY  
OF CANADA, LTD.  
WINDSOR, ONTARIO**

## NEWS AND NOTES

*(Continued from page 41)*

of a study of open and closed treatment in a long series of such fractures, Urist of Los Angeles (*J. A. M. A.*, 159: 1088, 1955) states quite categorically that the closed treatment of fractures of the tibia is superior in every way and in nearly all circumstances to open reduction. The author maintains this, although he is aware that open methods are increasingly being used. He considers that operation is contraindicated in freshly comminuted fractures of the tibia. He also feels that non-operative methods of fracture treatment require as much (or more) professional ability, effort and patience as does open reduction; the skill needed for closed treatment is therefore deserving of higher regard than it has enjoyed in the past.

## THE NUFFIELD FOUNDATION

The report of the Nuffield Foundation for the year ended 31 March 1955 has been received. As usual it is a joy to read and a valuable source of news of research on projects supported by the Foundation. Among the projects listed this year, the following may be mentioned. A study of immunological reactions of the central nervous system, with special reference to the rate of formation and circulation of cerebrospinal fluid in various diseases, is being carried on in the University of Oxford. A team in the Middlesex Hospital Medical School, London, is pursuing studies of aldosterone and related hormones. The bulk of the funds for medical research is still being devoted to fundamental work in chronic rheumatic diseases. Other types of project, such as a study of the possibility of establishing a consultative industrial health service in the Tyne valley and a study in the University of Bristol of birth trauma and mental deficiency are being carried out. Grants have also been given for study of heart-lung machines in London and elsewhere, for studies on electrical techniques in connection with the uterus in labour, and research into the relation between physique and behaviour.

There has been an allocation of money for the care of old people and for research in aging. Professor K. J. Franklin of St. Bartholomew's Hospital, London, is planning physiological research into aging from conception to death, on the view that human life may be divided into four phases, conception, evolution, maturation and involution. Though the work will be done mainly on animals, men and women who appear to be particularly fit for their chronological age will be studied.

## CHILDREN IN HOSPITAL

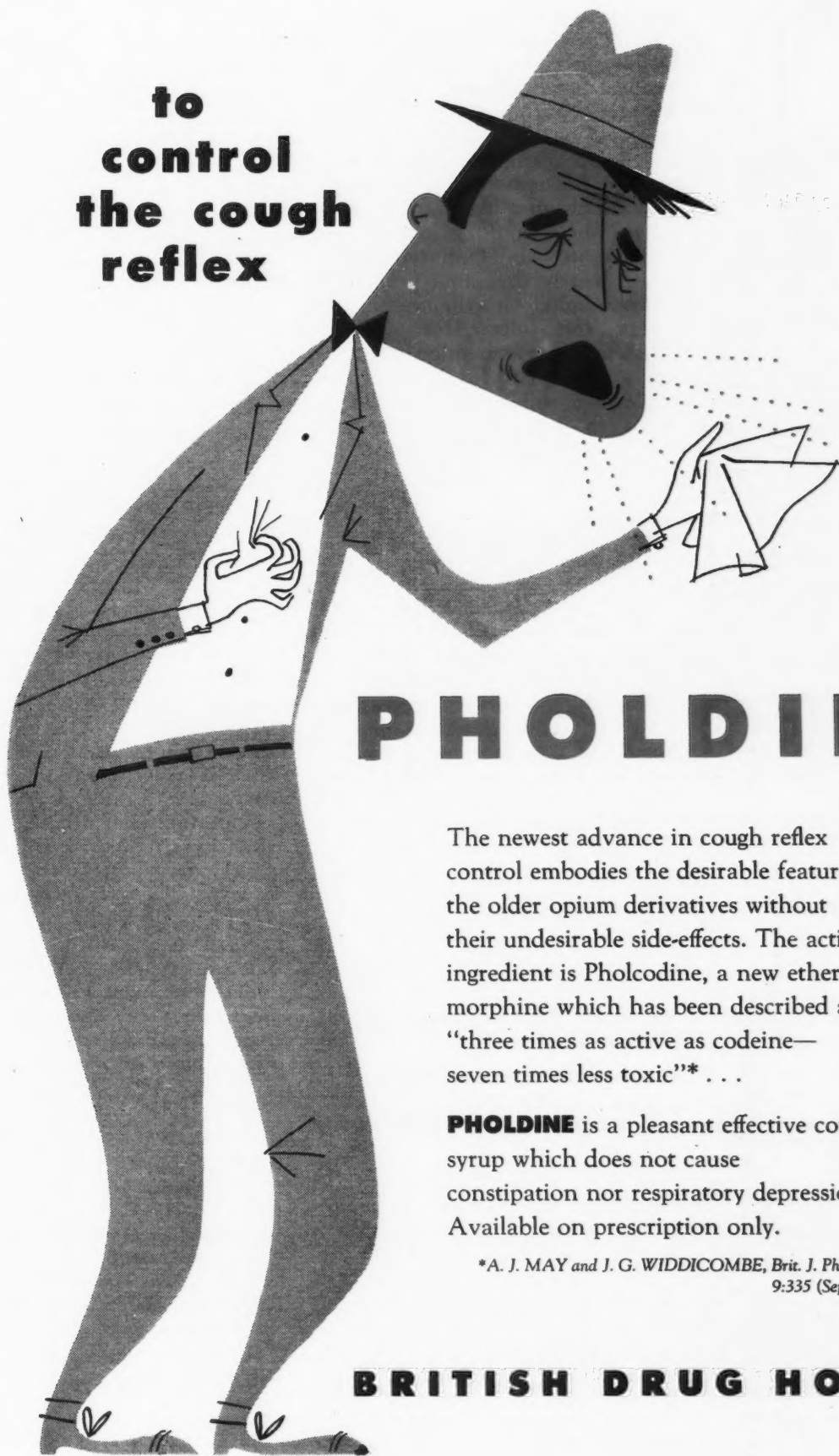
The attention of physicians is drawn to an excellent little leaflet prepared by the Mental Health Division of the Department of National Health and Welfare, Ottawa, and entitled "Preparing Your Child for Hospital". This would be a useful leaflet to hand to any mother whose child is about to pay a visit to hospital.

## WOMEN IN MEDICINE

The annual report of the John and Mary R. Markle Foundation describes a study made by the Association of American Medical Colleges of women in medicine; this study was supported by the Foundation. The basis of the study was a sample of 1,200 women and 800 men graduating from a medical school between 1925 and 1940. It was found that women entering the profession of medicine did not marry to the extent of the general female population; almost one-third of the sample are single. Whereas 91% of the men were in full-time medical practice, only 49% of the women were so occupied. Of the unmarried women about three-quarters had practised full-time and continuously since graduation. About one-third of the married women had a full-time practice, but it was more common to find that they had practised full-time for a period and then part-time or not at all. Nevertheless, women not in practice were still making use of their knowledge in many ways to the benefit of the community. Women specialized to almost the same extent as men, but the specialties tended to be different.

*(Continued on page 44)*

**to  
control  
the cough  
reflex**



## **PHOLDINE**

The newest advance in cough reflex control embodies the desirable features of the older opium derivatives without their undesirable side-effects. The active ingredient is Pholcodine, a new ether of morphine which has been described as "three times as active as codeine—seven times less toxic"\* . . .

**PHOLDINE** is a pleasant effective cough syrup which does not cause constipation nor respiratory depression. Available on prescription only.

\*A. J. MAY and J. G. WIDDICOMBE, *Brit. J. Pharmacol.*  
9:335 (Sept.) 1954

**BRITISH DRUG HOUSES**

### HANOVIA LUXOR ALPINE LAMP



#### Invaluable Aid in Effective Treatment of Psoriasis

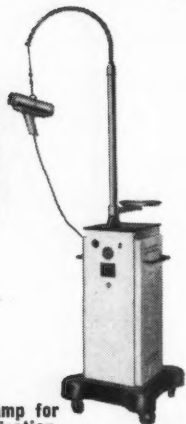
The Goeckerman technique (crude tar and ultraviolet radiation) is very helpful in many cases. Ultraviolet light produces a definite chemical change in the tar. This combination is reliable and effective.

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Among the features which distinguish the Hanovia Luxor Alpine are its instant start and its rapid build-up to full intensity. It provides intense radiation with even distribution of wide shadowless surfaces. Flexible, may be adjusted to any desired position. Low in original cost, economical to operate.

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Cooled by air instead of water, using new principles of aero-dynamics, the Hanovia Aero-Kromayer Lamp provides the most minute and accurate control of any required degree of clinical actinic reaction on skin surfaces or within the body cavities. A very intense source of focused ultraviolet energy, the Hanovia Aero-Kromayer Lamp can produce a first-degree erythema in 2 seconds when in contact with the average untanned skin. May be tilted up or down sharply while lighted — operated in any position — without decreasing its ultraviolet emission. An invaluable facility for orificial work.

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## NEWS AND NOTES

(Continued from page 42)

The most popular specialties in order were: pædiatrics, psychiatry, obstetrics and gynæcology, and internal medicine. About the same proportion of men and women had scientific publications to their credit. Women physicians earned less than men, but in general worked fewer hours per week.

Both groups were asked what advice they would give to a son or daughter about studying medicine. Nearly the same proportion recommended medicine as a career for sons. More women physicians recommended medicine for a son than for a daughter, while men were much less enthusiastic in advising daughters to enter medicine than were the women.

### UNIVERSITY OF TEXAS COURSE IN CARDIOLOGY

The University of Texas Postgraduate School of Medicine announces the establishment of the James J. and Una Truitt Chair in Cardiology and its sponsorship of a course in Practical Bedside Cardiology to be given by Dr. Samuel A. Levine, Clinical Professor of Medicine at Harvard Medical School, from March 14 to 17, 1956, at Houston, Texas. The course will feature the recognition and management of the most common cardiovascular problems in practice. Information may be obtained from the University of Texas Postgraduate School of Medicine, Texas Medical Center, Houston 25, Texas.

### DIETARY DEFICIENCY AND ALCOHOL

In 1943 some Chilean authors published the results of experiments on rats given a diet deficient in vitamin B. They found that rats tended to consume more alcohol offered to them under these conditions. During the progress of an investigation into the dietary habits of the French peasant, two French authors, Delore and Berry (*Presse méd.*, 63: 1591, 1955), found a relationship between the amount of alcohol drunk and the poverty of the diet. They therefore conducted experiments on rats on the lines of the Chilean ones, offering the rats an alcohol solu-

tion *ad lib.*, and divided the animals into three groups. The first group, on a balanced diet, consumed a uniformly low volume of alcohol every day. On the other hand, rats given a diet deficient in B vitamins suddenly began to take to drink at about the 30th day, while they first showed signs of vitamin deficiency about the 38th day. On being returned to a normal diet, they rapidly abandoned their intemperate habits. In a third group given a supplement of mineral water containing magnesium or iron in addition to the deficient diet, the consumption of alcohol was lowered.

The authors suggest that dietary deficiency leads to a need for alcohol, and consider that this may be a factor in human subjects too. They suggest that provision of a balanced diet is important both in prevention of alcoholism and in protection against alcohol intoxication.

### SOVIET MEDICINE

It is reported (*Science*, 122: 1080, 1955) that for the first time in over 10 years a U.S. doctor and nurse have toured the U.S.S.R. as guests of the Soviet Ministry of Health. This couple, Major and Mrs. Paul W. Schafer, report that they encountered a medical system which was highly centralized with all doctors and nurses as civil servants. They felt that hospitals, which apparently gave good medical care, had a surplus of trained physicians who were often doing work handled by nurses and technicians in the U.S.A. They comment on the extensive use of local anaesthesia with large volumes of 0.25% procaine solution. They state that infant and maternal mortality rates have been sharply reduced in recent years through the almost universal adoption of "natural childbirth" techniques. The Schafers report that they were everywhere received in a very friendly and hospitable fashion and that Soviet physicians repeatedly emphasized their desire to establish contact with their American colleagues.

### DIAGNOSTIC TEST FOR RHEUMATOID ARTHRITIS

It has been announced that a diagnostic test for rheumatoid

(Continued on page 48)

builds blood  
without  
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Chlortetracycline can claim a distinguished record: in  
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is more than a *billion*.

But the most significant fact is told by time. For eight  
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*Each capsule contains:*

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Thiamine Mononitrate (B <sub>1</sub> )	2.5 mg.	Calcium Pantothenate	5 mg.
Riboflavin (B <sub>2</sub> )	2.5 mg.	Vitamin K (Menadione)	0.5 mg.
Niacinamide	25 mg.	Vitamin B <sub>12</sub>	1 mcgm.

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## NEWS AND NOTES

*(Continued from page 44)*

arthritis (sheep-cell test) claimed to be 90% accurate is now available to U.S. physicians applying to the Streptococcus Laboratory of the Grace-New Haven Hospital, 789 Howard Avenue, New Haven, Connecticut.

## WILLIAM OSLER MEDAL

In order to stimulate interest and research in medical history among students of the medical schools of the United States and Canada, the American Association of the History of Medicine has established a William Osler Medal to be granted annually to the author of the best student essay submitted to the Association.

The Association will consider unpublished essays by men or women who were students in Schools of Medicine and had not yet obtained their doctor's degree at the time the essay was written. To be eligible an essay must be submitted before or within one year after the author's graduation. Original research will be given preference but the Association will

consider essays which, without being the result of original research, show an unusual appreciation and understanding of historical problems. Essays should not exceed 10,000 words in length, and must be sent before March 1, 1956, to Erwin H. Ackernacht, M.D., Chairman, 113 Service Memorial Institutes, Madison 6, Wisconsin.

## APC VIRUS DISEASE

A report from Johns Hopkins University and the National Microbiological Institute, Bethesda, Maryland, describes the successful conjunctival and pharyngeal inoculation of type 3 and type 4 APC viruses into human volunteers. The illness produced resembled the pharyngoconjunctival fever recently reported in this Journal. Twenty-six out of 40 volunteers developed conjunctival symptoms, associated with sore throat in 20, and other symptoms such as cough, headache and nasal discharge.

## U.S.S.R. CONTRIBUTIONS TO TECHNICAL ASSISTANCE IN THE FIELD OF HEALTH

Dr. M. G. Candau, Director-General of the World Health Organization, has announced the departure of three WHO officials for Moscow. These officials will discuss with the Soviet authorities the best use in the health field of the U.S.S.R. contribution to the UN Technical Assistance programme, particularly in terms of services of medical and other health experts, of supplies and of training facilities.

The visit of the WHO officials forms part of current consultations taking place between the U.S.S.R. Government and the various organizations participating in the UN Technical Assistance scheme.

## LARYNGOLOGY AND BRONCHO-ŒSOPHAGOLOGY COURSE

The next Laryngology and Broncho-œsophagology Course to be given by the University of Illinois, College of Medicine, is scheduled for the period March 5

through March 17, 1956. The course is under the direction of Dr. Paul H. Holinger.

Interested registrants are asked to write directly to the Department of Otolaryngology, University of Illinois, College of Medicine, 1853 W. Polk Street, Chicago 12, Illinois.

## WHO MEETING ON POLIO VACCINATION

Urgent problems concerning poliomyelitis vaccination were explored by a group of medical scientists meeting in Stockholm, Sweden, from November 21-25 under World Health Organization auspices. This was the first exchange of knowledge and experience on the subject between European, American and South African research and health workers.

Several countries are at present pursuing research aiming at the production of polio vaccines, and a few health authorities (in Canada, Denmark, South Africa and the U.S.A.) are already using anti-polio vaccination as a public health measure. Many more countries, although keenly interested, are still undecided what policy to adopt. The World Health Organization expects that this study group will bring together sufficient authoritative information on the numerous problems involved to enable the Organization to give sound practical guidance to national health authorities requesting it.

The group reviewed the facts now available from a number of countries relating to field trials of polio vaccine, the laboratory testing of vaccines for safety and potency, and the problems of their production in large quantities.

An attempt was made to relate the cost of large-scale polio vaccination programmes with the results which might be expected under the differing conditions obtaining in the various parts of the world.

Expected future developments in this field were also examined together with the possibility of accelerating the progress of research through a closer co-ordination of efforts in different countries.

The group met at the headquarters of the Swedish Associa-

*(Continued on page 53)*

## NEWS AND NOTES

(Continued from page 48)

tion of Engineers and Technologists (Svenska Teknologföreningen) in Stockholm. Members participated as independent scientists and not as representatives of their governments; their recommendations will be addressed to the Director-General of the World Health Organization.

Dr. Jonas E. Salk, University of Pittsburgh School of Medicine, contributed an important working paper for the group's consideration.

The other persons invited to attend the meeting were: Dr. F. P. Nagler, Ottawa, Canada; Dr. H. von Magnus, Copenhagen, Denmark; Professor P. Lépine, Paris, France; Professor R. Haas, Freiburg, Germany; Dr. Karl Evang, Oslo, Norway; Dr. J. H. S. Gear, Johannesburg, South Africa; Professor S. Gard, Stockholm, Sweden; Dr. W. L. M. Perry, London, England; Professor E. T. C. Spooner, London, England; Dr. A. D. Langmuir, Atlanta, Georgia, U.S.A.; Professor J. R. Paul, New Haven, Connecticut, U.S.A.; and Dr. A. B. Sabin, Cincinnati, Ohio, U.S.A.

## NEW DRUG FOR OBESITY

Dr. Alexandre of Paris reports studies of a new agent in the treatment of obesity (*Presse méd.*, 63: 1122, 1955). The substance tested was 2-phenyl-3-methyltetrahydro-1:4-oxazine, and it was used in the treatment of 27 ambulatory patients who had already undergone treatment by diet, diuretics and thyroid extract. Patients were given one-and-a-half 25 mg. tablets daily (one tablet on waking and a half tablet at lunch). The results were very variable. There were five failures, but in the rest results were considered satisfactory. In some cases a spectacular loss of weight coincided with the loss of appetite caused by the drug. In some cases results were no better than those obtained with other drugs, but the main advantage of this new amine was the absence of side-effects. Its central effect is apparently much less than that of amphetamine, so that insomnia does not occur; it does not raise blood pressure, has no effect on metabolism, and has a lethal dose three to four times higher than that of amphetamine.

## INFECTIOUS HEPATITIS

From a study including about 350 patients, Dr. Chalmers and his colleagues show that strict rest in bed is not necessary for patients with acute infectious hepatitis. Their patients were services personnel, and it was found that allowing patients to get up if they wanted to did not produce worse results. They recommend that the level of serum bilirubin should be checked at intervals, and the brom-sulfalein retention determined. If the latter becomes stable at between 5 and 10%, the patient may be discharged with safety. The patient may require to go back to

bed later because of recurrence of abnormality of liver function.—*J.A.M.A.*, 159: 1431, 1955.

## SMOKING AND THE LARYNX

Pathologists at the Mayo Clinic have shown by study of sections from the larynx at postmortem examination that excessive smoking is associated with the following laryngeal changes: (1) thickening of the surface epithelium; (2) round-cell infiltration; (3) oedema; (4) squamous-cell metaplasia.—*A.M.A. Arch. Path.*, 60: 472, 1955.

(Continued on page 54)

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for general use

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Supplied: Bottles of 100 and 1000 tablets.

1. Hejtmancik, M.R., and Herrmann, G.R.: *Texas St. J.M.* 51:238 (May) 1955.
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#### NEWS AND NOTES

(Continued from page 53)

##### SAFETY OF POLIO VACCINE

The U.S. Public Health Service Technical Committee on Poliomyelitis Vaccine has issued an interim report (*J. A. M. A.*, 159: 1444, 1955), dealing mainly with safety. The report is summarized as follows:

"The Technical Committee on Poliomyelitis Vaccine is of the opinion that the principal factors that were involved in earlier manufacturing and testing difficulties have been identified and corrective measures have been taken. Among these factors is the absolute need for removal of particles within which virus may be protected from inactivation by formaldehyde. Provisions have been made to insure as far as possible the removal of such protected particles by suitably spaced filtration procedures. In addition, the safety-test programme has been strengthened by improved sampling procedures in the tissue culture tests and by increasing the sensitivity of the monkey safety tests. These measures, together with continuous review of plant production records, assure the safety of released vaccine and should make possible an increased availability of vaccine."

##### DIET IN CORONARY DISEASE

Dr. L. M. Morrison of Los Angeles produces evidence from an eight-year follow-up study of patients suffering from coronary atherosclerosis that diet is an important factor in prolonging their lives. He has followed up two groups of 50 patients each; one group was allowed the typical American diet rich in fat and cholesterol while the other group was kept on a low-fat, low-cholesterol, high-protein diet of about 1,600 calories per day, together with vitamin and other supplements. The patients on the special diet lost 17 to 20 lb. in weight and then stayed at the new level. Of the patients in this group, 28 are still surviving after eight years, whereas only 12 of the control group are still alive. Not only is this the case, but also the patients on a diet felt better, tolerated exercise and were more fit for work.—*J.A.M.A.*, 159: 1425, 1955.

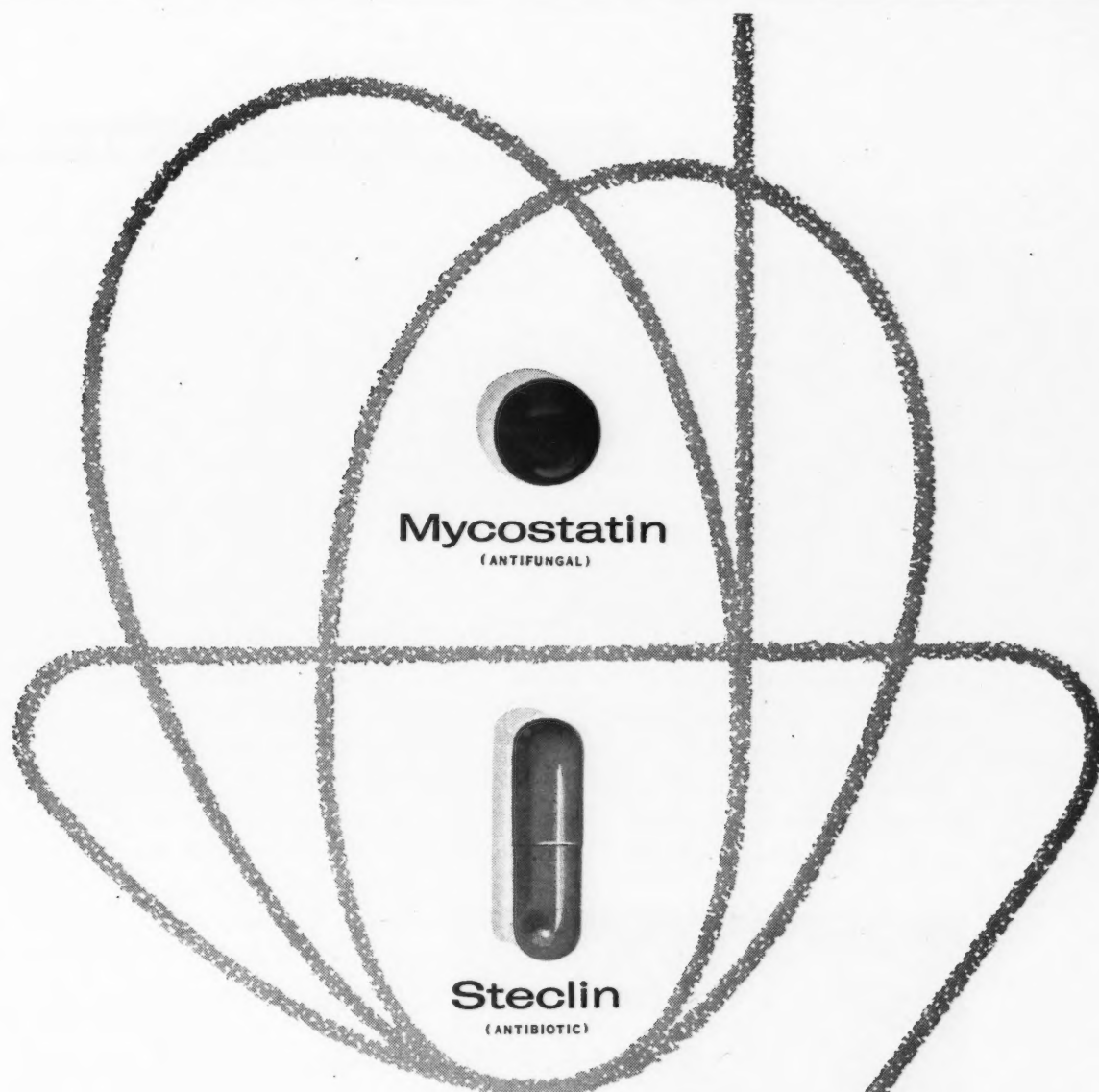
##### CORTISONE AND ACTH

The November issue of the *Practitioner* contains a very useful symposium on cortisone and ACTH. These substances have recently become freely available to general practitioners in the United Kingdom and the articles are therefore designed particularly to instruct the general practitioner in the use of these two potent drugs. The article on dangers and complications of cortisone and ACTH therapy is specially recommended. We quote from the author's conclusion:

"It is not easy at present to put the side-effects of cortisone and corticotrophin in proper perspective. A long list of complications is not in itself sufficient to condemn a drug. The textbooks of fifteen years ago devoted pages to the side-effects of the sulphonamides, but they are still used in considerable quantities and with good effect. There is no doubt that these new substances should be used in patients suffering from disorders with so poor a prognosis as the chronic collagen diseases. The point on which opinions differ is the justification for their use over long periods in cases of rheumatoid arthritis or asthma. This is probably largely a matter of the proper selection of cases. The list of possible complications is, however, sufficiently impressive to warrant second thoughts. Once cortisone treatment has been started it is very difficult to turn back. In case of doubt it is better to be cautious and to avoid the disappointment which is inevitable if this prop has to be withdrawn from a patient who has experienced the benefit of its initial support."

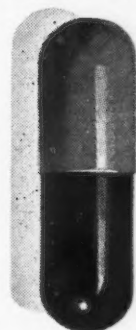
##### ANTIBIOTICS IN GASTROENTERITIS

Because of the confusion as regards the value of antibiotics in non-specific gastroenteritis, the effects of various antibiotics and of a triple sulfonamide preparation were compared in 241 cases of severe infant diarrhoea in a Johannesburg hospital. Of the 241 cases, 71 were shigella or salmonella infections. A control group was used, receiving only penicillin as drug therapy, though cases in this group or in the salmonella group were switched to chloramphenicol or terramycin if they did not respond. Results showed that terramycin and chloramphenicol were particularly indicated in treatment of shigella and salmonella infections, but that their beneficial effects in non-specific gastroenteritis were less evident.—*South African M. J.*, 29: 1061, 1955.



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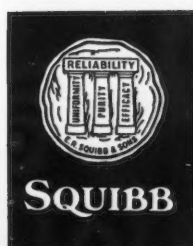
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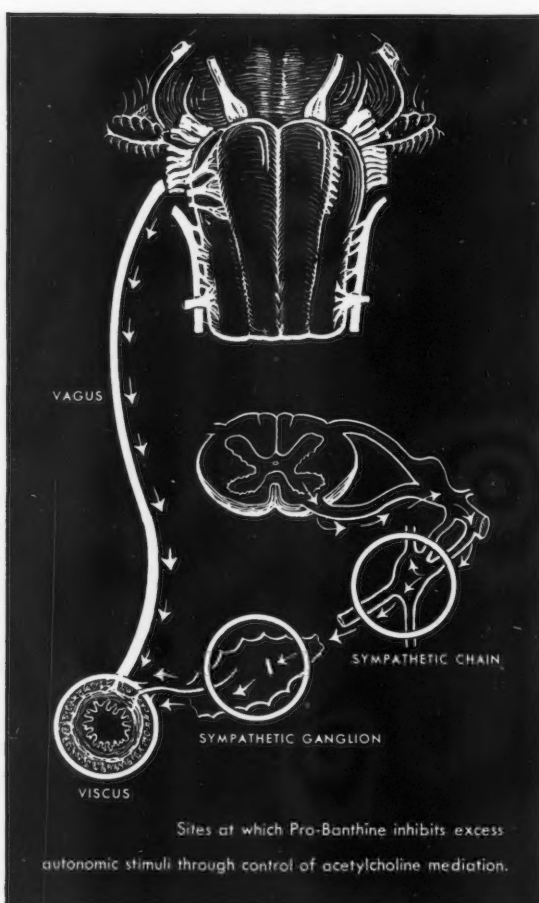
Pro-Banthine Bromide ( $\beta$ -diisopropylaminoethyl xanthene-9-carboxylate methobromide, brand of propantheline bromide) is available in sugar-coated tablets of 15 mg.; ampuls of 30 mg., for more rapid effects and in instances when oral medication is impractical or impossible.

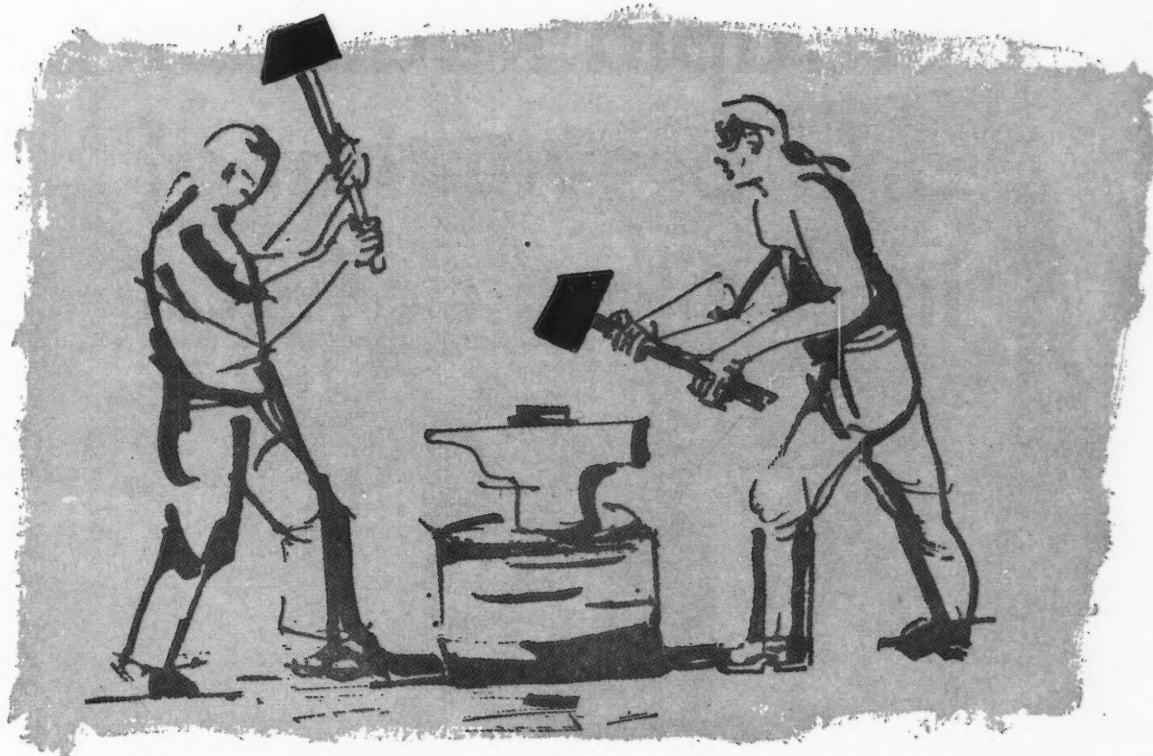
For the average patient one tablet of Pro-Banthine (15 mg.) with each meal and two tablets (30 mg.) at bedtime will be adequate. G. D. Searle & Co., Research in the Service of Medicine.

1. Schwartz, I. R.; Lehman, E.; Ostrove, R., and Seibel, J. M.: *Gastroenterology* 25:416 (Nov.) 1953.

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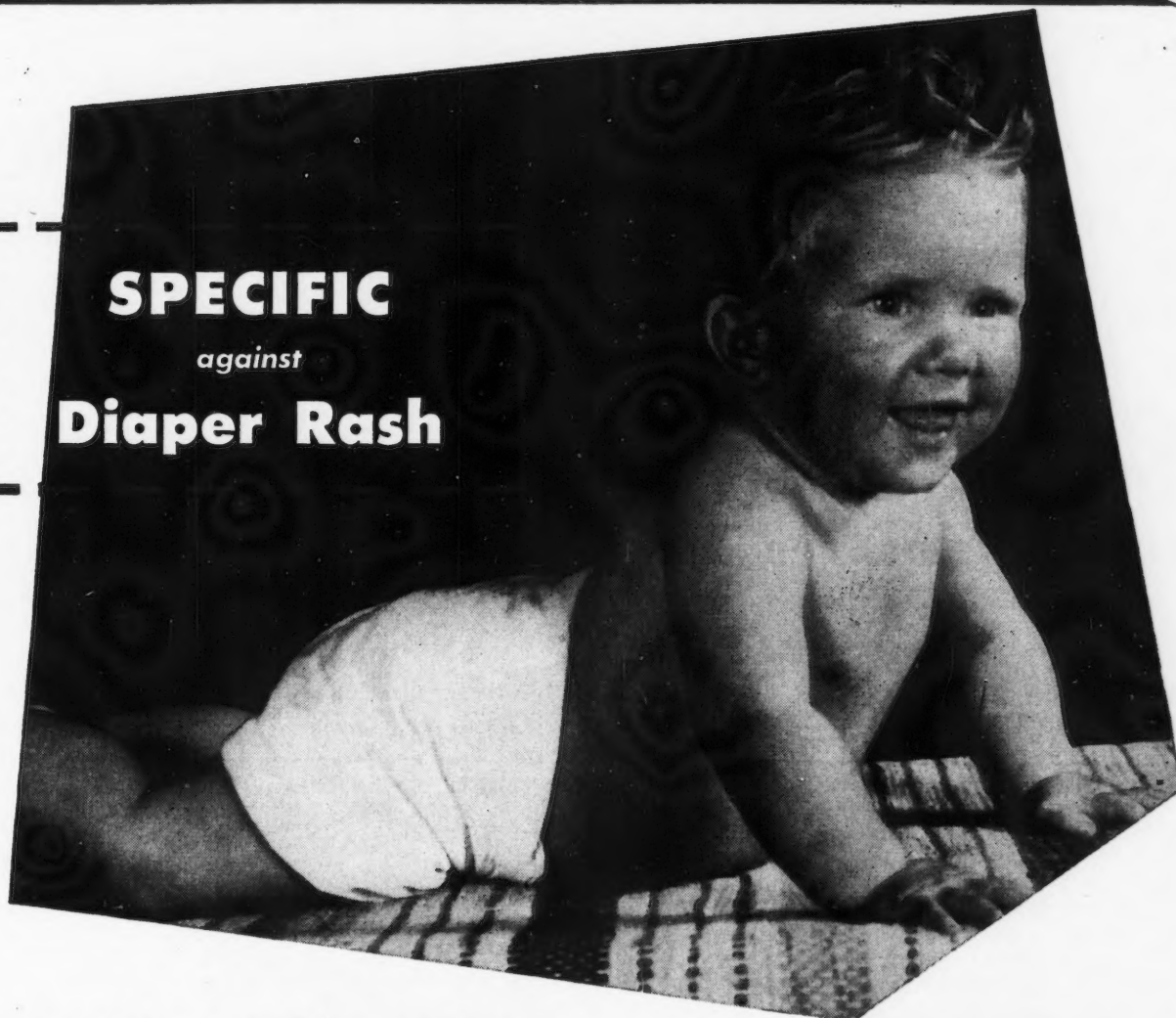
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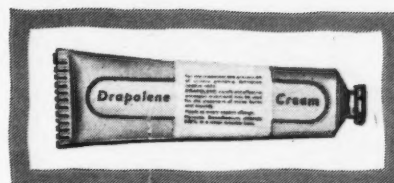


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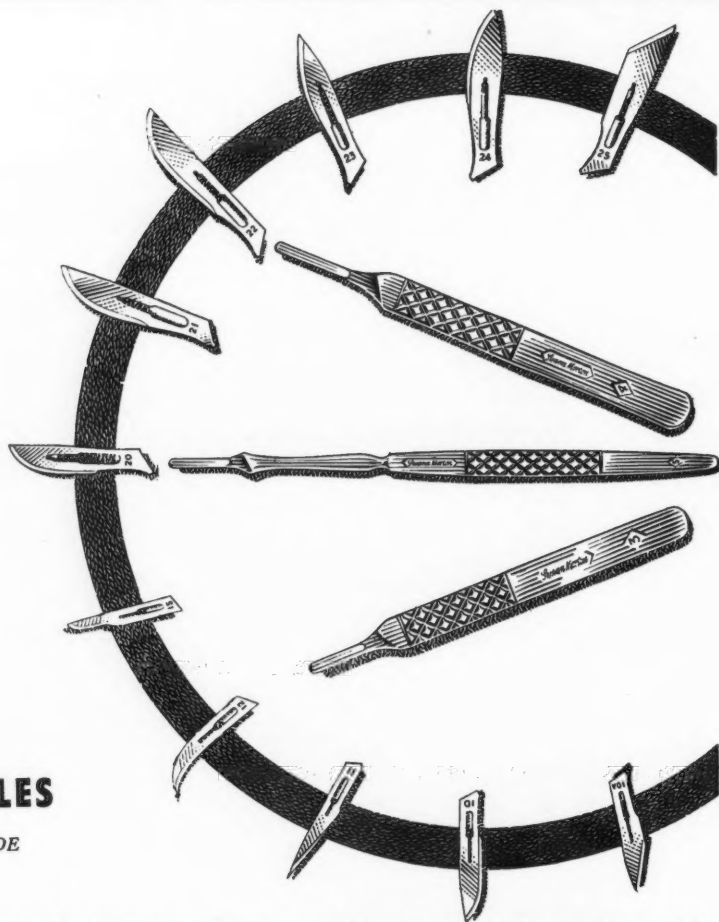
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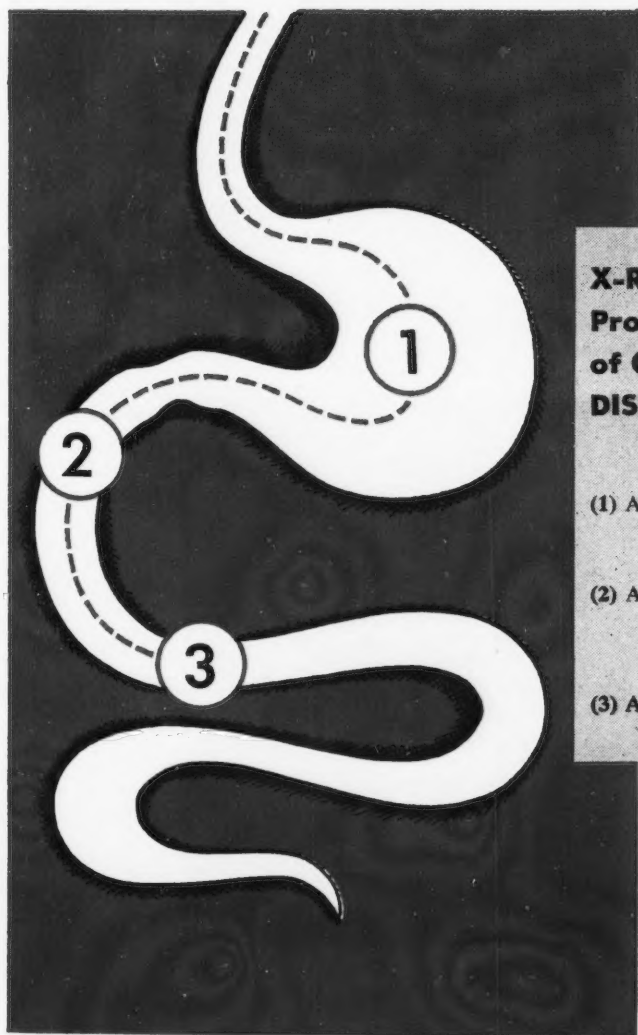
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MONTREAL, QUE.



# NEW

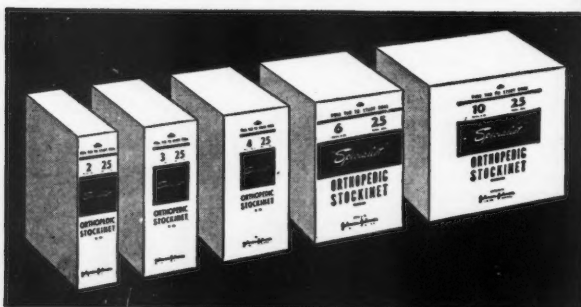
## dispensing-box

# "Specialist"<sup>TM</sup> stockinet



**QUICKER!**      **NO WASTE!**  
**DUST-FREE!**

Just specify "Specialist"<sup>TM</sup> Orthopedic Stockinet... comes in 5 widths... 2", 3", 4", 6", 10"... all by 25 yards.



**Johnson & Johnson**  
LIMITED      MONTREAL

\*TRADE MARK

## know your diuretic

will your cardiac patients  
be able to continue  
the diuretic you prescribe



*uninterrupted therapy is the key factor in diuretic control of  
congestive failure. You can prescribe NEOHYDRIN  
every day, seven days a week, as needed.*

TABLET

# NEOHYDRIN

BRAND OF CHLORMERODRIN

(18.3 MG. OF 3-CHLOROMERCURI-  
2-METHOXY-PROPYLUREA IN EACH TABLET)

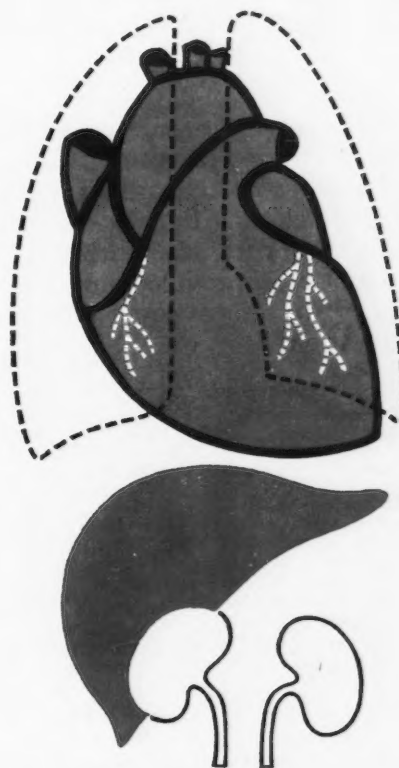
*no "rest" periods...no refractoriness*

*acts only in kidney...*

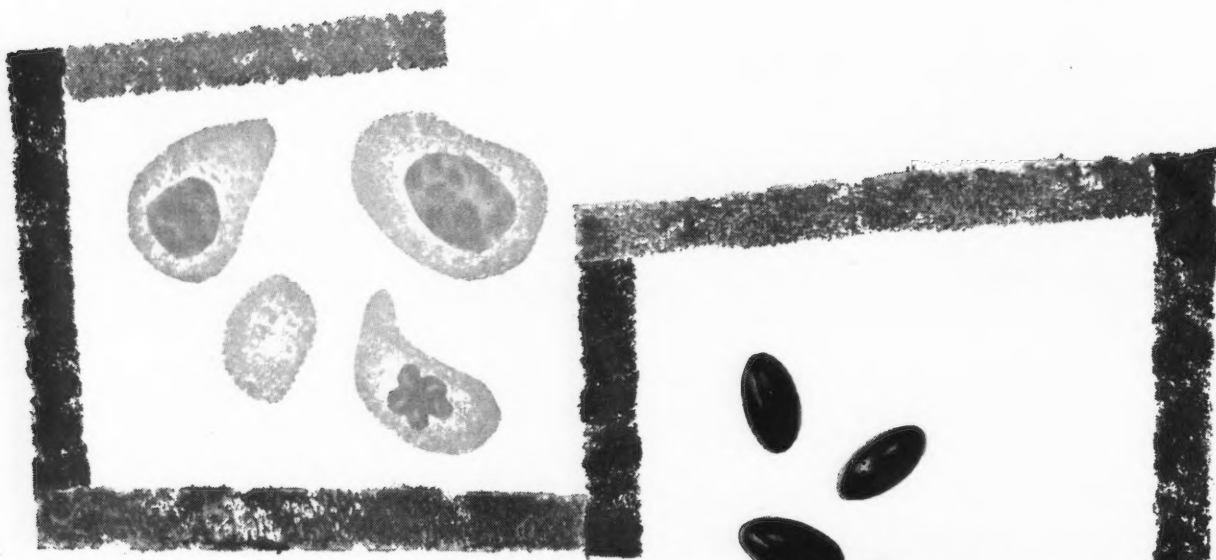
*no unwanted enzyme inhibition  
in other parts of the body.*

*standard for initial control of*

*severe failure* **MERCUHYDRIN® SODIUM**  
BRAND OF MERALLURIDE INJECTION



*L*eadership in diuretic research  
*akeside* LABORATORIES (CANADA), LTD.  
24 WELLINGTON STREET, WEST, TORONTO, ONTARIO

*microcytic anemia*

*one of the many anemias which can  
be effectively treated with*

# PERIHEMIN\*

Hematinic Lederle

Nine out of 10 treatable anemias respond to PERIHEMIN. Its potent formula includes every known hemopoietic agent, including Purified Intrinsic Factor Concentrate. With this single product, you provide complete anemia therapy in a form convenient for the patient.

Dosage: one capsule, t.i.d.

Each capsule contains:  
Vitamin B<sub>12</sub> with Intrinsic Factor Concentrate..... ½ Oral Unit  
Vitamin B<sub>12</sub> (additional)... 5 mcgm.  
Ferrous Sulfate..... 192 mg.  
Folic Acid..... 0.85 mg.  
Ascorbic Acid (C)..... 50 mg.  
Insoluble Liver Fraction N.F. 50 mg.  
PERIHEMIN Jr Capsules, for children, are approximately one-quarter the potency of this formula.



dry-filled sealed capsules  
(a Lederle exclusive!) for more  
rapid and complete absorption!

LEDERLE LABORATORIES DIVISION, NORTH AMERICAN Cyanamid LIMITED, MONTREAL, QUEBEC

\*REG. TRADE-MARK



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150 St. George Street,  
Toronto 5, Ontario.*

Date submitted .....

1950  
Cortone\*1952  
Hydrocortone\*1954  
Alflorone\*1955  
Deltra\*the delta<sub>1</sub> analogue of hydrocortisone

# 'Hydeltra'\*

(Prednisolone Merck) **tablets**

2.5 mg.-5 mg.  
(scored)

'Hydeltra'

Indications:

RHEUMATOID ARTHRITIS

BRONCHIAL ASTHMA

INFLAMMATORY SKIN CONDITIONS

'Hydeltra' offers increased clinical effectiveness . . . lowers the incidence of untoward hormonal effects.

'Hydeltra' is supplied as 2.5 mg. and 5 mg. scored tablets in bottles of 30 and 100.

SHARP  
& DOHMETORONTO 16, ONT.  
DIVISION OF MERCK & CO. LIMITED

\*Trade Mark

DATE DUE

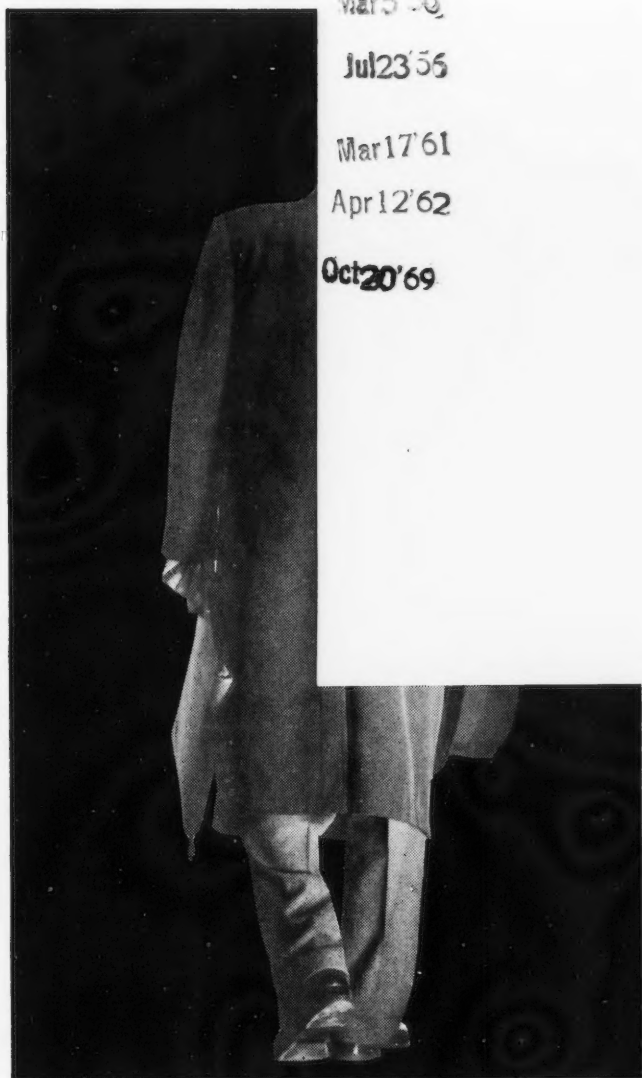
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**Ritalin**

Canadian Med. Assn. J.  
Jan. 15, 1956

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MONTREAL

505

antidepressant

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er blood pressure or  
hyperexcitation or

iragement, anxiety,  
on, depression after

ing 10 mg. Ritalin; bottles of 100 and 500.

Meet the newest  
member of the

# MEAD FAMILY



*The complete drop-dosage line ...  
by MEAD*

*"They call me*

## **Deca-Vi-Sol**

I have 10 nutritionally significant vitamins  
including B<sub>6</sub> and B<sub>12</sub>—  
and I hope I will be of service to you.  
You know my brothers, of course . . ."



*"I'm*

## **Poly-Vi-Sol**

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